Dun's Review, International Edition

A Journal for the Promotion of International Trade

Published Monthly by R. G. DUN & CO., The Mercantile Agency

Established 1841 — 290 BROADWAY, N.Y., U.S.A. — First European Branch Opened 1857

Subscription $3.00 U. S. Gold per year, payable in advance

Entered at the New York Post Office as second class matter.

Vol. XXIII. **JUNE, 1914** **No. 4.**

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DUN'S INTERNATIONAL REVIEW is also published monthly in Spanish, the Spanish edition being REVISTA INTERNACIONAL DE DUN. The Buyer's Guide on pages 3, 4, 6, 8, 10, 12, 13 and 14 is also printed in French, German, Italian, Russian and Dutch, to be mailed with copies of this edition to countries in which those languages are spoken. A Portuguese Supplement containing this guide is mailed with all copies of the Spanish edition sent to Brazil, Portugal and the Portuguese Colonies.

Correspondence regarding any topic of international trade interest is invited from readers of the Review and contributions on such subjects, if available for publication, will be paid for at space rates. Photographs of commercial scenes will be purchased, if suitable for reproduction. Manuscripts and photographs not used will be returned promptly if postage is sent for that purpose.

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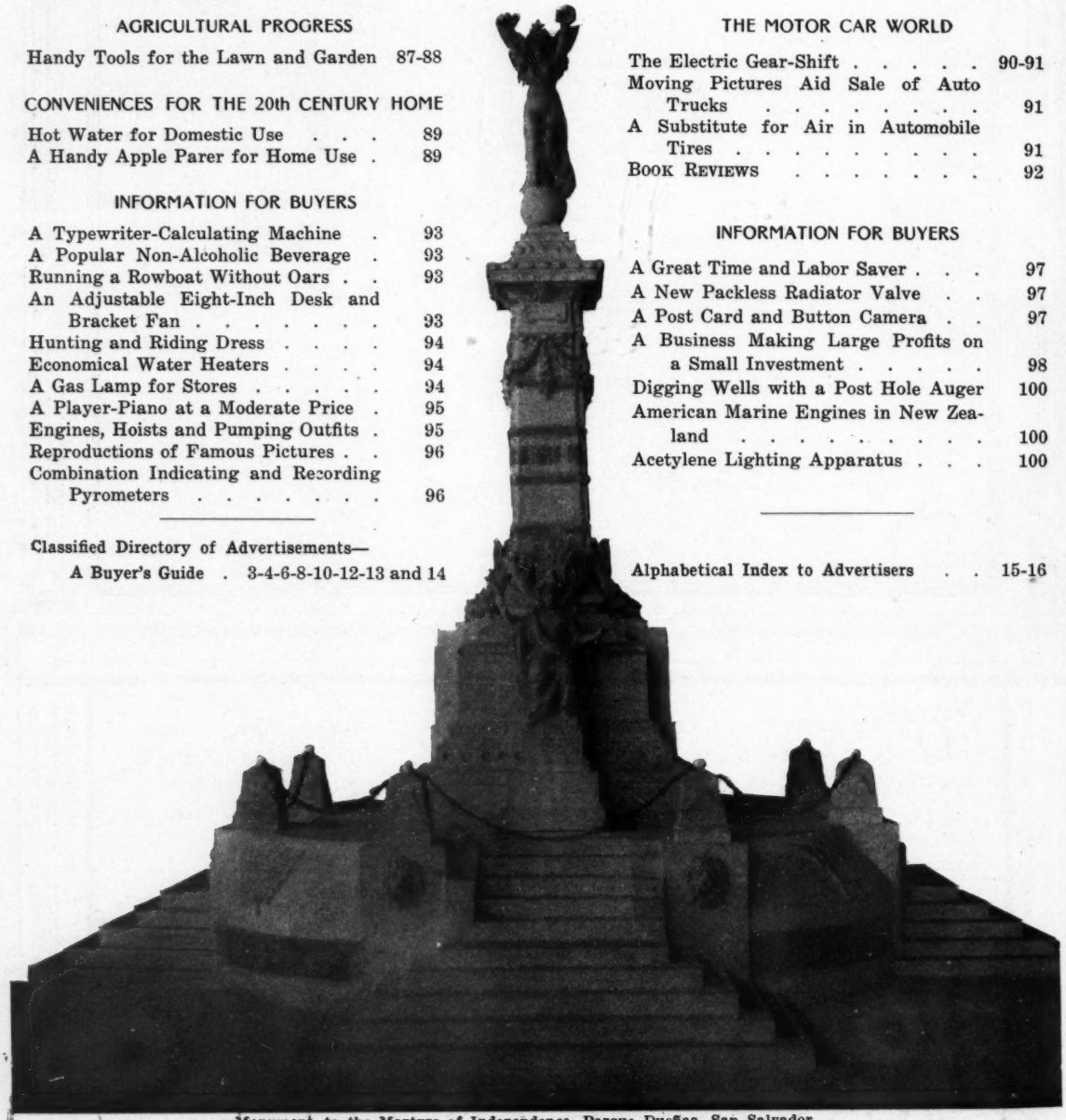


Monument to the Martyrs of Independence, Parque Dueñas, San Salvador.

THE PROSPEROUS REPUBLIC OF SALVADOR

The Panama Canal and a Transcontinental Railway via Guatemala, will Soon Give it Two Direct Routes to the Atlantic

By Edward Neville Vose, Editor "Dun's International Review"

ALTHOUGH the smallest of the 21 American Republics, Salvador is by far the most densely populated, surpassing in this respect every country in the New World, and all but seven of those in Europe. Since its first discovery and settlement by the Spanish conquistadores, Salvador has been dependent for its connection with Europe and with the eastern seaboard of the United States upon the overland routes across the Tehuantepec depression and the Isthmus of Panama, or the long sea route around South America via the Straits of Magellan. The completion of the Panama Canal will, therefore, be commercially as important to Salvador as to Peru and the other republics on the west coast of South America. Within the next two years the country will have still another route to the Atlantic, the railway from Santa Ana to Zacapa in Guatemala, where it will connect with the existing line running to Puerto Barrios. This new railway will soon be in active course of construction by the International Railways of Central America, and the same company is also building a most important line from San Salvador, the capital, to La Unión, on the western shore of the Gulf of Fonseca. It is not too much to expect that the canal and these new railways will completely revolutionize existing economic and commercial conditions throughout the republic, resulting in the investment of large amounts of capital and stimulating the country's industries in every direction.

SITUATION AND BOUNDARIES.—Alone of all the Central American Republics, Salvador has no frontage on the Atlantic Coast, being situated entirely on the Pacific slope

Municipal Palace at Santa Ana, a type of Salvador's modern public buildings

of the main ridge of the Cordilleras. Its area is estimated at 7,225 square miles, which is slightly less than that of the State of New Jersey, and it also resembles that State in shape and in the fact that its greatest length is parallel to the sea. Its coast line, which is about 160 miles long, trends slightly from northwest to southeast. It is situated between 13° 12′ 30″ and 14° 27′ 30″ North latitude, and 87° 37′ and 90° 6′ West longitude from Greenwich. It is bounded on the West by Guatemala, the River Paz with its affluents marking the frontier on that side. On the North and East it is bounded by Honduras and the Gulf of Fonseca, while the Pacific Ocean forms the southern boundary. Instead of following the crest of the Sierra, the northern frontier follows the course of several small rivers, so that the principal peaks of this range fall outside of the republic. The eastern boundary is indicated by the important River Guascorán. The islands in the Gulf of Fonseca are about equally divided between Salvador and Honduras.

POPULATION.—The total population reported January 1, 1912, was 1,161,426, or an average of 160.7 per square mile, making Salvador rank second in population among the Central American countries and twelfth among all the countries of North and South America. In point of density of population it is surpassed only by Belgium,

The imposing National Palace at San Salvador, the capital of the Republic

Holland, Great Britain, Japan, Italy, Italy, Germany and Luxemburg. In 1778 the total population of the Province of El Salvador was 117,436, and in 1886 the population of the republic was 651,130. It will therefore be seen that the number of inhabitants is increasing very rapidly. The number of Indians in the country is reported as 234,648, while 772,200 of the inhabitants were Ladinos or Mestizos. Only a little more than 10 per cent. of the total population of the country is white.

PHYSICAL CHARACTERISTICS.—While the general aspect of Salvador is mountainous it may properly be divided into four distinct regions. Along the coast there is a belt of low-lying, richly wooded alluvial land extending inland from 10 to 20 miles. Behind this rises a huge rampart of volcanic cones extending the entire length of the republic on a line very nearly parallel to the coast. Some of the more important of these volcanoes, with their respective altitudes, as reported by the Intercontinental Railway Commission, are: Campana, 4,675 feet; Santa Ana, 7,826; Apaneca, 6,084; San Salvador, 6,398; San Jacinto, 3,842; San Vicente, 7,131; Tecapa, 5,261; Usulatán, 4,767; San Miguel, 6,994, and Conchagua, 4,101. The most notable of all, however, is the ever active volcano Izalco, the 6,185-foot cone of which has been thrown up since 1770 when it first made its appearance in the midst of what had been a cattle ranch. From the fact that the clouds of overhanging smoke are lit up at night by the molten fires within its crater Izalco is often called "the lighthouse of Salvador." Some distance inland from the volcanic coast range are a number of long extinct volcanoes, much lower in altitude and dating from an earlier geologic period. Among these are Guasapa, 4,627 feet high; Capello, 3,685, and Cacaguatique, 5,417 feet in altitude.

Between the igneous coastal range and the Honduran Sierra lies a beautiful and fertile valley watered by the River Lempa and its tributaries. Altogether this river, which is the largest in Salvador, has a length of 200 miles and drains about 6,000 square miles of territory. Its lower reaches are navigable by river steamers, but a bar prevents ingress by ocean vessels. The other rivers flowing from or between the volcanic peaks of the coast range are short and unimportant. While the valley of the Lempa is well peopled, the population is chiefly concentrated on the dangerous volcanic plateau, notwithstanding the fact that some of the principal cities located there have been destroyed many times. There is another much smaller interior basin formed by the rivers rising in the extreme western part of the country, on the slopes of the volcano Santa Ana, and a third basin in the valley of the River San Miguel near the eastern end of the country. These rich interior valleys form a region that differs both from the low-lying coastal plains

and the volcanic highlands, while the fourth region comprises the slopes of the lofty sierras, of which the highest peaks are across the frontier in Honduras. The principal rivers are the Lempa and San Miguel, already mentioned; the Paz on the western frontier, the Guascorán on the eastern frontier, and the Jiboa. There are three large lakes in the country, Lake Guija on the Guatemalan frontier, Coatepeque near the volcano Santa Ana, and Lake Ilopango, a short distance from San Salvador. In 1880 the last lake was the scene of a very remarkable volcanic phenomenon. The waters of the lake rose suddenly five feet, overflowing into the Jiboa, where the torrent cut out a channel that drained the lake to 33 feet below its former level. Meanwhile a new island appeared in the lake, the waters of which became boiling hot. Other severe earthquakes have been recorded at frequent intervals, of which the

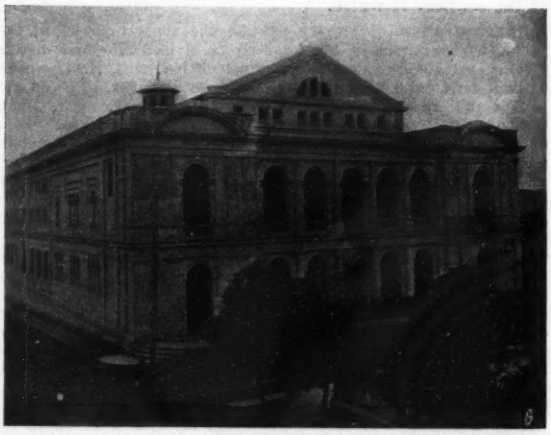
Pan-American Union

The corner of the handsome cathedral at San Salvador, which was completed in 1888

most notable occurred in 1539, 1575, 1594, 1659, 1707, 1719, 1793, 1815, 1839, 1854 and 1873.

CLIMATE.—Most of the land surface of Salvador is, by reason of its altitude, in either the temperate or the cold zone, the climate in general resembling that of the *Altos* of Guatemala. While the coast lands are very hot, the normal range being from 78° to 83° F., the uplands enjoy a much more agreeable temperature—the mean falling to 74°, and at some points even to 70° F. The rainy season lasts from the middle of May until October, south winds called *vendavales* then prevailing. During the dry season north winds prevail, with frequent storms called *terrales*, which are much dreaded by fishermen, especially in February and March. The rainfall is heavier near the coast, but all portions of the republic are well watered.

HISTORICAL SKETCH.—The region now occupied by the Republic of Salvador was first explored by Pedro Alvarado, the famous lieutenant of Cortés, who invaded the country in 1524 and captured



The theatre at Santa Ana—a fine example of modern Latin-American architecture

the capital, Cuscatlán, the following year. The history of Salvador under the captain-generalcy of Guatemala does not differ in any material respect from that of the other provinces, although being farther removed from the capital it suffered somewhat less from Spanish rule. The first blow for the liberation of Central America from the control of Spain was struck at San Salvador on the 5th of November, 1811, a date which has since been set apart as a national holiday. September 15, 1821, Salvador joined the Central American Federation and was the only Central American State to forcibly resist the Mexican annexation under Iturbide. During the struggles to establish a Central American Federation, Salvador fought on the side of Morazán in behalf of Central American unity, and when the Federation was finally dissolved in 1839 Salvador delayed its formal declaration of independence for two years.

While Salvador has taken part in the various wars waged in Central America with a view to re-establishing the Federation, it has, on the whole, been fairly free from internal revolutions. Its present constitution was adopted in 1864 and amended in 1886 to the form now in force. The stability of constitutional government in Salvador was strikingly demonstrated on the occasion of the assassination of President Manuel Enrique Araujo in February, 1913. This deplorable event failed to disturb the peace and tranquility of the country, the new President, Señor Carlos Melendez, succeeding to the office under absolutely peaceful auspices, and his authority being immediately recognized by all parties in the republic. With this exception—the only incident of its kind in the history of Salvador—the presidents since 1886 have served the full terms for which they were elected.

COMMUNICATIONS.—The fact that Salvador is situated wholly on the Pacific Coast made it for many years dependent upon the more or less irregular sailings of such Pacific steamship lines as called at its four ports. A few years ago, however, the Salvador Railway Company established a line of direct steamers from Salvadorean ports to Salina Cruz, where passengers and merchandise were shipped overland by the Tehuantepec route. Mails are now sent by this route to Europe in sixteen days instead of a month, which was the average time previously required, while planters are able to get their produce to European markets in a little over 30 days, as against 40 to 50 via Panama and over 100 via the Straits of Magellan.

A street in Santa Ana—most houses are one story high on account of earthquakes

This steamship route is so popular that it is stated that nearly three-fourths of the passengers and freight for the United States and Europe now travel by these boats, most of which have their passenger accommodations fully booked before the date of sailing. Two new steamers have recently been built for this service, making a fleet of three altogether, of 1,000 to 1,200 tons each. Of these the *Acajutla* makes the direct run between Acajutla and Salina Cruz, leaving the former port on the 10th, 20th and 30th of each month, and the latter on the 4th, 14th and 24th, the trip taking 36 hours. The *Salvador*, which formerly ran between these points, now runs between Salina Cruz and the Guatemalan ports of Ocós, Champerico and San José. The third steamer, the *Jiquilisco*, runs between Salina Cruz and the ports of Acajutla, El Triunfo and La Unión. The steamers of this line also call at the Honduran port of Amapala and the Nicaraguan port of Corinto. In the opinion of the managers of this line, small steamers rather than large ones are best adapted for handling the coastwise traffic of Central America. When the Panama Canal is finished and in operation the boats will probably go to Balboa instead of Salina Cruz.

From New York the most direct steamship route to Salvador is that of the American-Hawaiian Steamship Company, which has sailings every five days for Puerto Mexico, thence by rail to Salina Cruz and there connecting either with the boats of the Salvador Railway Company above mentioned, or those of the other Pacific steamship lines.

This line carries freight only. Other lines from New York carrying passengers as well as mails are the Panama Railroad Steamship Line, with sailings five or six times a month for Colón, thence by rail to Panama and by connecting steamer to ports in Salvador; the Hamburg-American Line (Atlas Service), with sailings every Saturday for Colón; the Royal Mail Steam Packet Company, with sailings every alternate Saturday for Colón; and the United Fruit Company steamship service, with sailings every Wednesday and Saturday for Colón. Beyond Panama all of these lines follow the same route as that of the Panama Railroad Steamship Company. The Wolvin Line dispatches occasional steamers from New Orleans and from Texas City, Tex., for Puerto Cortés (Coatzacoalcos), as freight offers, whence merchandise can be shipped overland by the Tehuantepec route. This line carries both freight and passengers. A much more roundabout route, but with regular sailings, is that of the United Fruit Company's steamship service, which has sailings every Wednesday and Saturday from New Orleans for Colón.

From San Francisco, the Pacific Mail Steamship Company has sailings the 5th, 15th and 25th of each month for all West Coast ports of Mexico and Central America, these vessels calling at Acajutla, La Libertad and La Unión in Salvador. The Kosmos Line also has sailings from San Francisco about once a month for the same ports and the Jepson Line every 21 days. The Kosmos Line and

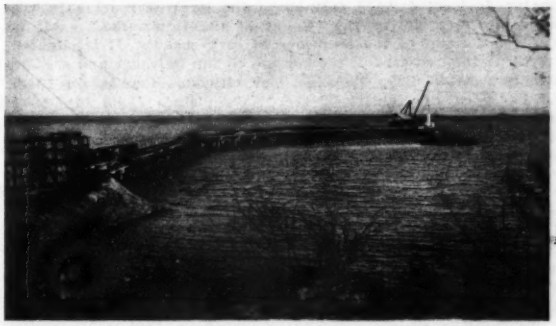
Pan-American Union

New road in course of construction near Puerto de la Libertad, Salvador

W. R. Grace & Company (Merchants' Line) have sailings from Seattle for Central American ports twice a month. All of these lines call at Salina Cruz and Balboa both ways, thus completing the service of the various Atlantic lines already mentioned.

For land communications, Salvador has for many years enjoyed the advantage of possessing one of the best managed railways in operation in any Latin-American country. This system, owned and operated by the Salvador Railway Company, Ltd., was begun in 1882 and completed as far as Santa Ana in 1896 and to San Salvador, the capital, in 1900. It starts at the Pacific port of Acajutla and the main line to Santa Ana has two branches, one to San Salvador, already mentioned, and the other to La Ceiba. Altogether the line comprises 96¼ miles of track, exclusive of sidings, the gauge being three feet. There are 41 steel bridges on the line, constructed by German, Belgian, British and American contractors, while practically all of the rolling stock was made in the United States. The management of this company is English, the head office being at London, and the amount of capital invested is £1,392,800. This company also operates the three steamers previously mentioned.

Concessions have been granted to Mr. René Keilhauer authorizing him to construct a line 223.6 miles long from the port of La Unión, on the Gulf of Fonseca, to a point on the Guatemalan frontier, whence it will be constructed, under a concession granted by the Government of Guatemala, to Zacapa, on the main line of the Guatemala Central Division of the International Railways of Central America. This concession has been taken up by the International Railways, and the line from La Unión to the city of San Salvador is rapidly being completed. It is at present finished as far as the River Lempa, 47.9 miles from La Unión. A surveying party has located the line from this point to San Salvador and the work of construction will no doubt be begun on that section very shortly. The line from Zacapa to Santa Ana will be 105 miles long and work on this division will soon commence. There will also be an extension from Santa Ana to Ahuachapan, close to the Guatemalan frontier and on the line of the Pan-American Railway surveyed by the Intercontinental Railway Commission in 1898. This branch will be 26 miles in length. The concession above mentioned also authorizes the construction of a line from San Salvador to Santa Ana, but as this will parallel the existing line of the Salvador Railway, it is likely that its construction will be deferred for the present. The concession further provides for the construction of a new steamship pier at La Unión, and work upon this is rapidly progressing, as the accompanying illustrations show. When completed, these lines will be operated as a part of the system of the International Railways of Central America and will give Salvador a direct rail route to the Atlantic Ocean, terminating at Puerto Barrios in Guatemala, and also a new rail route to the Pacific coast at La Unión. Since January 1, 1914, trains have been running four times a week between La Unión and Usulután,



International Railways of Central America

The new wharf in course of construction at La Unión, to be 800 feet long when completed

a distance of about 62 miles, and will probably be running as far as the River Lempa by the time this article is printed. The line reaches the important town of San Miguel, the capital of the Department of the same name, while some of the other stations are Batres, Calle Nueva, Miraflores, El Carmen, Olomega, Portillo and La Cumbre.

A plan has been submitted to the Congress of Salvador for the construction of a railway from Santa Tecla, on the line of the present Salvador Railway near San Salvador, to the port of La Libertad, the official contract submitted providing that the track should be of three feet gauge, the same as the existing line. This line, if constructed, will presumably be operated by the Salvador Railway Company. This company some time ago arranged with the Wells Fargo Express Company to establish an express business between Salvador and the United States and other countries. The Salvador Railway Company maintains well-equipped railway shops at Sonsonate, the first large town inland from Acajutla, where it is able to turn out steel passenger, freight and platform cars, and even locomotives. The workmen in these shops, and most of the employees on the railroad are natives of Salvador and travelers speak very highly of their efficiency in both departments.

International Railways of Central America

Building the new wharf at La Unión. The re-inforced concrete piles are 5 feet in diameter and 60 feet long

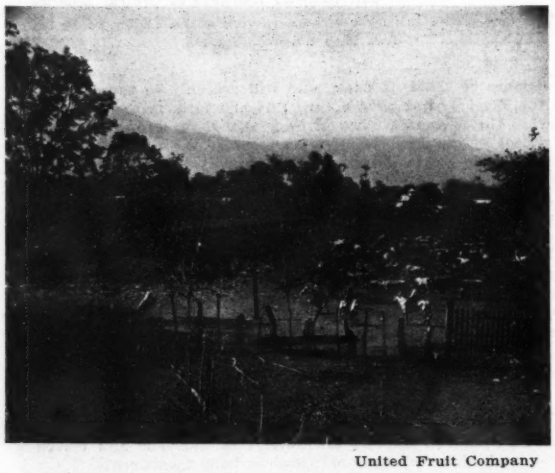
Salvador is better equipped than any other Central American Republic in the matter of public roads. During the last decade or so, and particularly during the last administration of the late President General Fernando Figueroa, many new highways of solid and enduring construction were completed. The main routes run longitudinally through the country from Rio Paz and the city of Ahuachapán, in the West, to the Rio Guascorán and La Unión, in the East. In general it may be said that there are fairly good roads connecting all of the principal towns with one another and some of those recently built are among the best ever constructed in tropical America.

DEPARTMENTS AND PRINCIPAL PLACES.—The Republic of Salvador is divided into fourteen departments, which, in view of the small size of the country, makes them little larger than counties in the United States . Following is a complete list of these, with their respective capitals:

Departments	Capitals	Departments	Capitals
San Salvador	San Salvador	Cabañas	Sensuntepeque
La Libertad	New San Salvador	San Vicente	San Vicente
Sonsonate	Sonsonate	La Paz	Zacatecoluca
Ahuachapán	Ahuachapán	Usulután	Usulután
Santa Ana	Santa Ana	Morozán	Gotera
Cuscatlán	Cojutepeque	La Unión	La Unión
Chalatenango	Chalatenango	San Miguel	San Miguel

There are 27 cities in Salvador and 51 towns, besides many villages and hamlets. The following list, however, comprises most of the places of commercial importance.*

SAN SALVADOR.—The city of San Salvador, the capital of the country, is located 2,115 feet above the level of the sea in the valley of Cuscatlán, or the "Valley of the Hammocks," as it is called on account of the frequency of earthquakes. It is situated directly to the eastward of the volcano of San Salvador and a short distance west of Lake Ilopango. The city was founded in 1543, and has been the capital of the republic since 1840. In 1854 an earthquake shock entirely destroyed all of the buildings in the city, but owing to preliminary warning tremors the loss of life was comparatively small. In 1873 the city was again destroyed by an earthquake, but in spite of these disasters has been rebuilt on the same site and at present shows no traces of its former ruins. The Government has erected a handsome office building in the city to accommodate its various departments, called the Casa Blanca, while the new National Palace is one of the most imposing buildings in Central America. The cathedral is also a modern structure, having been begun in 1881 and completed seven years later. The city also contains the National Institute, the University, a polytechnic school, a normal school, an imposing municipal theatre and many handsome churches and pretty parks. In recent years several fine avenues have been laid out connecting the city with its various suburbs. San Salvador is connected by rail with the port of Acajutla and will shortly be connected with La Unión, while if the proposed railway to La Libertad is constructed it will have direct access to three seaports. Most of the large importing houses in the country have offices at San Salvador and there are a considerable number of retail stores. The population of San Salvador in 1912 was 59,540.



United Fruit Company

Herd of cattle grazing on a typical farm in one of the fertile interior valleys

SANTA ANA.—The second largest city in the republic, capital of the department of the same name, Santa Ana is situated 2,100 feet above sea level, a short distance from the Guatemalan frontier. As the city is constructed on the sloping side of a valley some of its streets are rather steep, but the buildings are solid and substantial and the streets are well paved and lighted by electricity. There is a larger number of foreigners residing at Santa Ana than in any other town in the republic, and traveling salesmen usually visit its merchants as well as those at the capital. The city is very prosperous and the volume of its daily mercantile and financial transactions is far larger than those of any other city in the country except the capital. There is a handsome cathedral at Santa Ana and a very fine theatre. The city is the terminus of the Salvador Railway from Acajutla and will shortly be directly connected with the Atlantic Ocean at Puerto Barrios by the new line about to be constructed to Zacapa in Guatemala. The population is 48,120.

SAN MIGUEL.—This is the third largest city in the republic and was founded in 1530. It was formerly more prosperous than at present owing to the indigo trade which was carried on in this vicinity, but is now practically extinct. It is situated only 360 feet above the sea at the foot of the volcano of San Miguel and is the center of a prosperous agricultural district. During the past year it has been reached by the new railway from La Unión, a fine station having been recently completed there. It is probable that the railway will stimulate considerably its commercial and industrial activity. The present population is 24,768.

NUEVA SAN SALVADOR, OR SANTA TECLA.—This town, which is the capital of the Department of La Libertad, is situated a little to the west of the volcano of San Salvador and only 10 miles distant from the capital, with which it is connected by the Salvador Railway. It is 2,643 feet above the sea and was originally established as a place of refuge when the capital was destroyed by the great earthquake of 1854. The town contains wide and handsome streets lighted by electricity and a number of modern public buildings. Its population is 18,770.

Pan-American Union

A portion of the National Agricultural School—the Ministry of Agriculture is notably progressive

SAN VICENTE.—The capital of the department of the same name, this city is situated near the center of the republic, a short distance east of Lake Ilopango and directly north of the great volcano of San Vicente. It is a comparatively old town, having been founded in 1634, and made a city in 1658. The streets are well paved; there are a number of excellent public buildings and the place is of considerable commercial importance. At present the town suffers somewhat for lack of transportation facilities, but this will soon be remedied as it is on the line of the railway now in course of construction from La Unión to San Salvador. The population in 1912 was 17,832.

SONSONATE.—This is the first large town on the railway from the port of Acajutla, and besides being the capital of the department is the center of an important agricultural district. There are also a considerable number of factories in this department employing many hundreds of hands and producing cigars, cotton cloth, refined sugar, pottery, mats, baskets, distilled liqueurs and salt. The Municipal Palace is a large and imposing public building and there are quite a number of commercial establishments. The population is 17,016.

Pan-American Union

Boiling crude Peruvian balsam. This important article of commerce comes wholly from Salvador

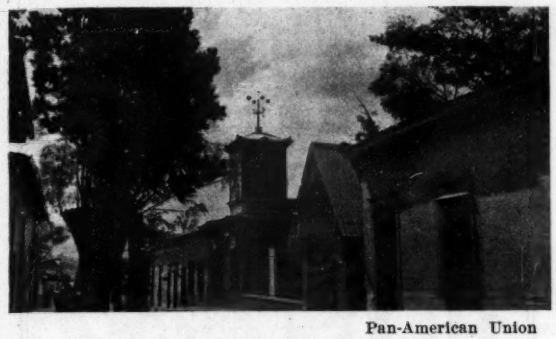
LA UNIÓN.—The largest port of the republic is La Unión, situated on the western arm of the Gulf of Fonseca, an extensive landlocked harbor, which is said to be the finest on the western coast of Central America. Hitherto passengers have had to disembark by means of launches, while freight was transferred to lighters. The International Railways of Central America, however, are now building a large modern wharf capable of accommodating steamers of any size likely to call at the port. This wharf is 16 feet wide for a distance of 400 feet, for the approach, and 95 feet wide for a further distance of 400 feet, and a warehouse is in course of construction on the wharf that will be 50 feet wide and 390 feet long. The reinforced concrete piles employed at the end of the wharf are 60 feet long and 5 feet in diameter. The im-

*For more detailed descriptions see pages 196-227 and 247-316 of Martin's *"Salvador of the Twentieth Century,"* from which many of the facts here given are taken.

pertance of La Unión will undoubtedly be greatly increased by the railway, which is already complete as far as the River Lempa, and will eventually run to San Salvador. The present population of the town is about 8,000.

ACAJUTLA.—This port is situated near the western end of the republic and is the terminus of the Salvador Railway. Ships anchor some distance from the pier and discharge cargoes by means of "bongos," which are native craft shaped like large whale boats. As the town is low and hot, travelers usually take the first train for the interior. The population is small.

LA LIBERTAD.—This is a port of call, and is situated about 30 miles to the east of Acajulta. There is an iron pier some 450 feet in length, with two large covered warehouses, steam cranes, etc. Goods are loaded and unloaded by means of lighters. A large amount of coffee is exported from here, and if the railway



Pan-American Union

The national observatory at San Salvador, to give warning of earthquakes

to Nueva San Salvador (Santa Tecla) should be constructed, the port would no doubt increase considerably in importance. The only cable station in Salvador is located here. The population is about 800.

TRIUNFO.—This is a small port situated between La Libertad and La Unión on the shores of a large and nearly landlocked lagoon. It is about 60 miles from La Libertad and 156 miles from La Unión. It is a port of call for the steamers of the Salvador Railway Company on account of the large quantity of coffee grown in the neighborhood and sent here for export.

AHUACHAPÁN.—Situated close to the Guatemalan frontier, this town is the center of an important agricultural district and the gathering point for a considerable quantity of coffee destined for export via Acajutla. A branch railway is to be constructed from Santa Ana to Ahuachapán, a distance of 26 miles, and when this is built the commercial importance of the town will no doubt be still further increased. Quite a trade with Guatemala is carried on at this point and considerable quantities of cigars are manufactured in the vicinity. The population is about 12,000.

CHALATENANGO.—Capital of the department of the same name, this is one of the oldest native towns in Salvador, and is situated on the slopes of the Honduran mountains in the northern part

Pan-American Union

New buildings at Chinameca, near San Miguel, on the railway route to San Salvador

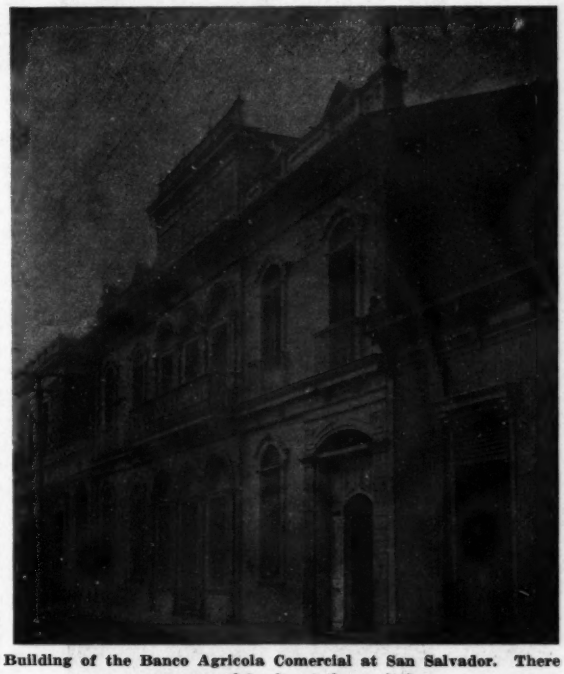
of the republic on a small branch of the River Lempa. The population is about 6,000.

COJUTEPEQUE.—This is a native town of between 8,000 and 9,000 inhabitants situated on the northern slope of the volcano of the same name, in the Department of Cuscatlán, of which it is the capital. This department is located very nearly in the center of the republic north of Lake Ilopango, and Cojutepeque will probably be on the line of the railway from La Unión to San Salvador. The town has on three different occasions been made the capital of the republic.

SENSUNTEPEQUE.—This town is the capital of the Department of Cabañas in the northern part of the republic. It is connected by road with Cojutepeque and is situated on the side of a mountain at an altitude of 2,310 feet. The population is about 10,000.

THE AMERICAN-BELGIAN CHAMBER OF COMMERCE

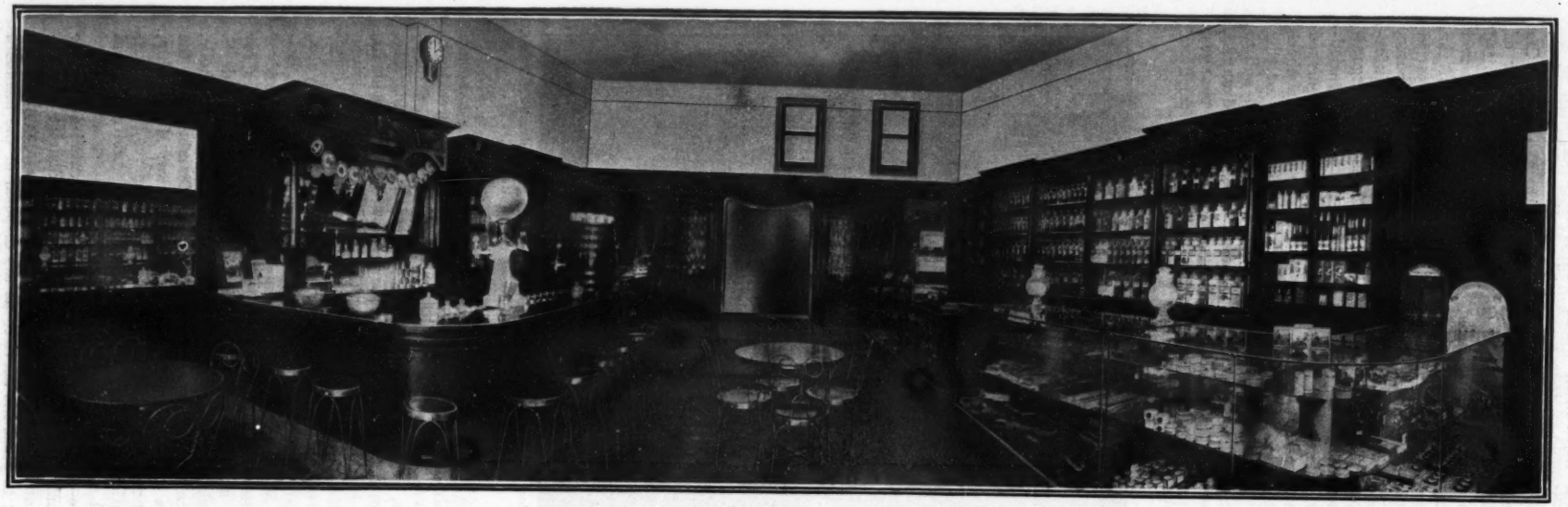
THIS institution, which was founded at Brussels in November, 1909, by several members of the American colony under the leadership of Hon. Ethelbert Watts, the American Consul-General at Brussels, and a number of Belgian gentlemen interested in commerce with the United States, has been of great assistance in cementing and stimulating amicable relations between merchants of the two countries. In addition to taking an active interest in all questions connected with American-Belgian commerce, the Chamber has organized a "Service of General Information" that is in constant touch with the trade organizations of both countries, and publishes a bulletin periodically giving a detailed account of the work accomplished and such other items as might be of value to the members and the general public. Included in the contents of this bulletin, which is sent gratuitously to the members and to consuls and Chambers of Commerce, will be found import and export trade statistics, information of tariff changes, interpretation of contested points concerning the tariffs of both countries, etc.



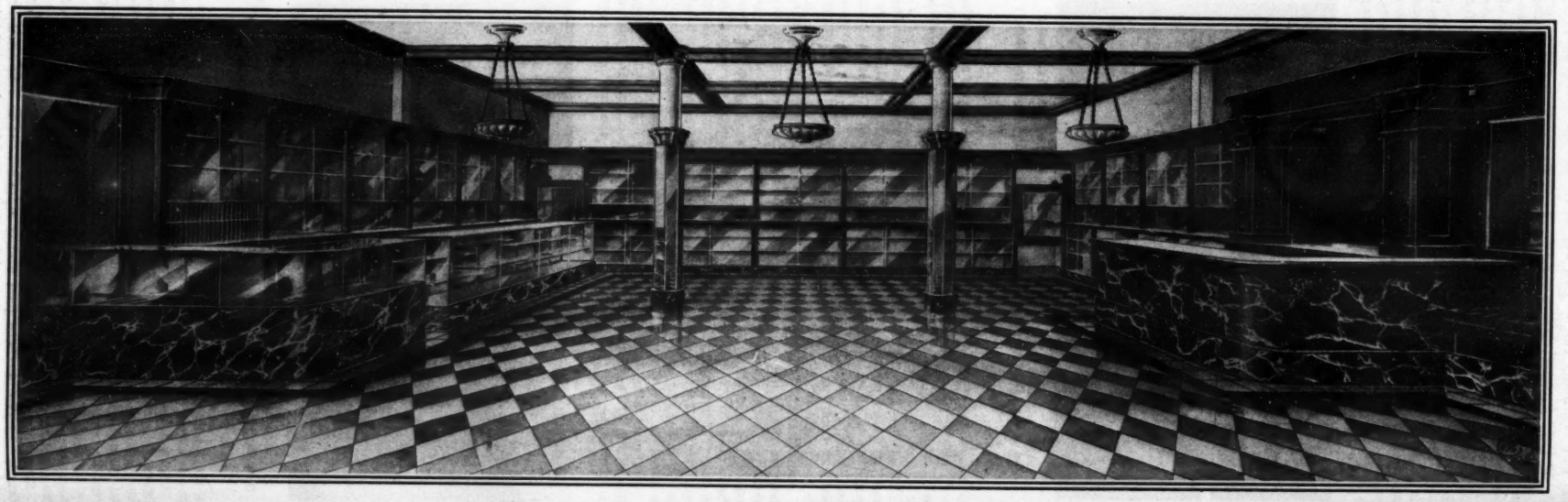
Building of the Banco Agricola Comercial at San Salvador. There are several banks at the capital

The influence and usefulness of the Chamber has been greatly developed by the energy of its former presidents, Messrs. George W. Silcox, E. M. Ehrlich and Capt. Georges Velge, and its membership has shown a steady increase. The organization has at present two honorary presidents, Hon. Brand Whitlock, United States Minister to Belgium, and Hon. George Coreman, the Belgian Minister of State; and two honorary vice-presidents, Hon. Ethelbert Watts, United States Consul-General, and Hon. E. Bergman, Belgian Senator. The management is vested in a board of directors consisting of 11 members, with the officers for 1914 as follows: J. H. Fleming, chairman; B. de S. Bardzki, vice-chairman and treasurer, and A. Van Schelle, honorary secretary. The work of the Chamber is in the hands of six special committees, as follows: Membership, Finance, Rooms and Entertainment, Commerce and Transportation, Publications and Statistics and Arbitration and Legal Affairs.

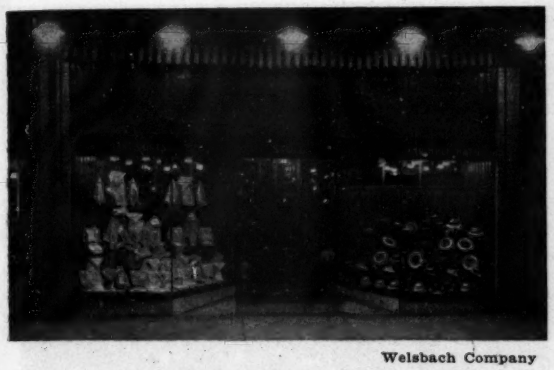
The offices of the Chamber are now located at 18, rue d'Arenberg, in the center of the business district of Brussels, and the secretary, Mr. E. Questiaux, is ready at all times to place his services at the disposal of the members and other interested parties in regard to all questions pertaining to the trade relations between the two countries.



Quincy Show Case Works



Two splendid examples of modern store fixtures—the upper illustration showing a complete pharmacy in solid mahogany, especially designed and made for a concern at Honolulu, T. H.; while the lower shows the new "All American" drug store fixtures, embodying the latest and most up-to-date ideas in interior design and arrangement



Welsbach Company

A fine display window arrangement and night illumination, using gas lamps

New York Edison Co.

Night display of a fashionable Fifth Avenue florist, using electric lights in moderation

MODERNIZING THE RETAIL STORE

How Progressive Methods, Fixtures and Equipment Contribute to Increase Sales, Retain Customers, and Eliminate or Lessen Leaks and Losses

By Thaddeus S. Dayton, New York

THE place to begin making over an old retail store is outside. The exterior and what can be seen through the windows are what attract customers. Small windows keep out the daylight and make it impossible to adequately display goods. If a man is muffled to the eyes you cannot tell what sort of a person he is. Primarily, the more a store front discloses of what is within the better it is.

But the light question goes farther back than that. It concerns all the merchants in the block and in the street as well as each individual. Light—plenty of artificial illumination—is a cure for dull trade.

The most famous street in America is better known as "The Great White Way" than as Broadway. The brilliantly illuminated part of it is the center of New York's life after dark. It began to be lit up and to acquire its present fame a little more than ten years ago. Since then crowds from all over the world have flocked thither to watch the myriad night lights, to wonder and to buy. It has stretched its blazing path northward year by year. The glare of light has created business.

To-day every big American city has a street that emulates New York's Broadway. Merchants have gotten together and have induced the municipalities to put in more street lamps. The merchants themselves have agreed to illuminate their own shops more brilliantly and to keep the lights going until eleven or twelve o'clock at night, even though their premises might close before then. Property values have risen in consequence as trade has boomed.

The local "white way" keeps the trade at home instead of letting it go to the nearest great city. Evening is an important part of the business day in every shopping district. It is practically the only time when husband and wife can "look" together and consider their purchases carefully. The more attractive the street and the more attractive the individual stores, the greater the trade. The lights can be depended upon to bring the crowds. But their task stops there. The show windows must create the desire for ownership, and the merchant must carry the goods for which there is a demand.

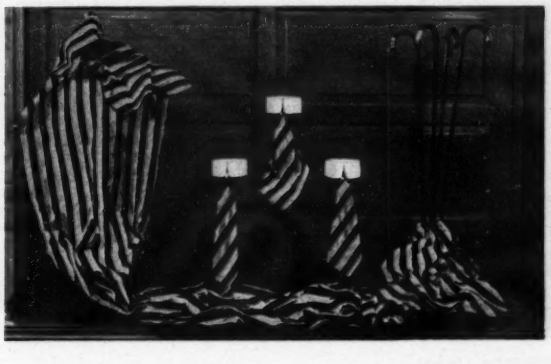
Window dressing is an art, a trade or a science—or all three. The object of putting goods in the window is to get people to come inside with an impulse to buy. Therefore the arrangement of the show windows of a retail store is a matter that demands continual thought and study.

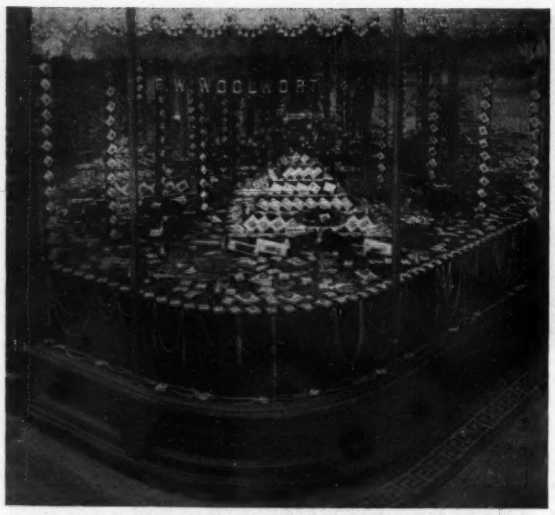
Different classes of goods demand different displays. There are as many theories about window dressing as there are about politics and government. In all of them there is much that is sound and practical. The class of goods sold and the class of customers likely to buy them are two primary factors. A five and ten cent store—a familiar feature in American cities—will fill its windows with a multitude of different articles because the volume of its business is made up of a number of small individual sales. The same rule about window displays would apply broadly to any other business of that character.

But if the retail store deals in a specialty or a limited number of articles of the same class—things sold at a relatively high price, like those in the specialty shops of Paris—the window display is likely to run to the other extreme. A single gown will be shown; there will be an artistic arrangement of a number of bottles of perfume, or

A haberdashery display window in New York, concentrating attention on evening wear

Window of another New York haberdasher, showing only a single line of neckwear





F. W. Woolworth & Co.

A Five and Ten Cent Store at Hartford, Conn.—a good window display for a low-priced line

Welsbach Company

A large and well-stocked hardware store, showing variety of fixtures and good gas lighting effect

something of that sort. The object is to concentrate the spectator's mind on the thing that is to be sold and to get him inside, rather than to confuse him with a multiplicity of objects and thus weaken the impulse to buy by diffusing it.

Between these two extremes lies the art of window dressing. It is something that each merchant has to work out for himself. If he is able to realize that he does not possess the necessary instinct, one of the best investments he can make is to employ an expert. If he cannot do that, let him study his clerks and try to discover and develop the necessary talent in one of them.

Many of the great manufacturers of foods, toilet articles, etc., solve this difficulty, temporarily, for the small merchant, so far as their own merchandise is concerned, by sending their own window dressers to build up a display that shall remain on show for at least a week. Or else the display is simply shipped to the retailer with full instructions how to arrange it. The principal feature of such exhibits consists of cartons of the article advertised, together with especially attractive pictures. In this way a wide demand has been created for many cereals and canned goods. The object is to make a food product look so good that the very picture will create an appetite.

The customer should not be disappointed when he enters the store, after having been attracted by the window display. The goods in the show cases and on the shelves should be, and can be, arranged in such a way that the original impulse to buy will be increased. Neatness and order are the first requisites. The stock should be arranged according to a definite plan so that there will be a sequence which will draw the customer from one counter to another after he has bought the thing he came in for. But there must not be too much harmony in the arrangement. There must be contrasts, otherwise the effect will dull the interest instead of heightening it.

If the store is large enough, parts of it may be divided into rooms in which certain things of sufficient importance may be shown. For example, it is the custom of houses selling typewriting machines to take the customer into a small room furnished only with chairs and a small table on which is the typewriter. All the light is focussed on that one object. The customer's attention is not distracted from it by anything else while the salesman explains its merits.

But no matter how attractively goods may be displayed, the work done in that direction fails of its full effect if the salespersons are not efficient. Merchandise will not "sell itself" beyond a certain point. Even automatic vending machines have to have human supervision to keep them in order. Therefore the merchant who is modernizing his retail store should give his clerical staff continual study.

While the clerk who sells the goods may be entirely capable to all appearances, he or she may not be so when the work is analyzed with a watch and a report sheet. The analysis and detail of timing operations have long been a feature of manufacturing. To-day they are a part of the system of the modern retail store. The objects are to ascertain the relations of the selling operation to the salary or salaries paid clerks, and to the overhead expense of the establishment. Underlying it all is the problem of reducing the aggregate expense of doing business and at the same time increasing the ability to take care of a larger volume of customers.

Interior arrangement of a Fifth Avenue florist's establishment, showing subdued electric lighting

New York Edison Co.

Unique lighting arrangement in a Fifth Avenue store—harmonizing admirably with the Oriental wares displayed

New York Edison Co.

New York Edison Co.

A large Fifth Avenue book store in which a strong but subdued light was necessary

New York Edison Co.

A display of craftsman furniture near Fifth Avenue, with goods arranged as if in a home

A time study of this sort, applied to an individual clerk, shows the number of persons waited on in say, two hours, the number of persons who bought, the number of persons who did not buy—and why. The analysis shows the time consumed per sale (including time devoted to prospects who did not buy). It also shows how much time was lost in hunting for goods required which were not readily accessible owing to poor arrangement or carelessness in putting them away. From thirty to fifty per cent. of the selling time, it has been found, is often wasted in this way. When a prospective customer turns away because he cannot get at once what he asks for, there is a direct loss of money as well as of time.

Investigations of this sort, systematically conducted, show the merchant where his store's mechanism has become clogged, where it impedes the movement of the rest, and in the aggregate spells a considerable annual loss. Time studies, it has been found, can be made more quickly in small stores than in large ones. Also the evils that they disclose can be remedied more easily.

One of the greatest problems in most stores, no matter what the size, is to serve customers with a maximum of speed during rush hours. Under the old methods, during the busiest time of the day, every storekeeper will acknowledge that it is often impossible to serve more than sitxy or seventy per cent. of those who have come in prepared to buy. The remainder lose patience, go away, and try to get their goods elsewhere. The art of getting customers into the stores has been developed to a far greater degree of efficiency in recent years than the art of serving them when they come. Much of this is due to the selling tools—the fixtures and general equipment, and to the accompanying systems. In manufacturing, tools are highly specialized, and the most skilled engineering attention is given to them. In the selling field the tools are just beginning to be considered, though in reality they are as important as they are in manufacturing.

The telephone is one of the most valuable aids to the modern retail store. The extent to which it may be used to increase sales is limited only by the salesman's ability to originate and apply schemes for getting customers into the habit of ordering goods by that method.

One American store issues an illustrated catalogue with the names and portraits of the telephone operators in each department. Thus the customer can visualize the person who answers his call. Another merchant, in advance of every special sale, sends a postcard to his list of customers, giving the date of the sale, and adding: "Better 'phone your orders—there'll be an awful rush for these bargains." Some drug stores give their customers a check for a free telephone call with every twenty-five cent purchase. It has been found that many persons will walk two or three blocks out of their way for this. A tailor who makes a specialty of cleaning and pressing clothes gives a rebate of five cents on all telephone orders. These are only a few of the clever schemes that have been devised to make the telephone boom retail trade.

In every case when a sale is made and the clerk takes the money or makes a charge it is necessary to have an accurate record of the transaction. This is as essential for the customer as for the merchant. The customer may wish to return the goods for one reason or another, and unless the sale can be traced and the proper credit given, endless confusion follows.

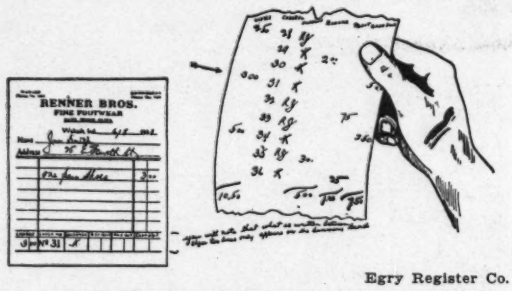
For the purpose of enabling the merchant to tell—a minute, a month or a year afterward—just what kind of a transaction has taken place in a given instance, mechanical registers of infinite variety have been devised. They run

A cigar store at Wichita, Kansas, with soda fountain and well-arranged show cases and fixtures

Quincy Show Case Works

A dry goods store at Wichita, Kansas—showing an excellent arrangement for a small store

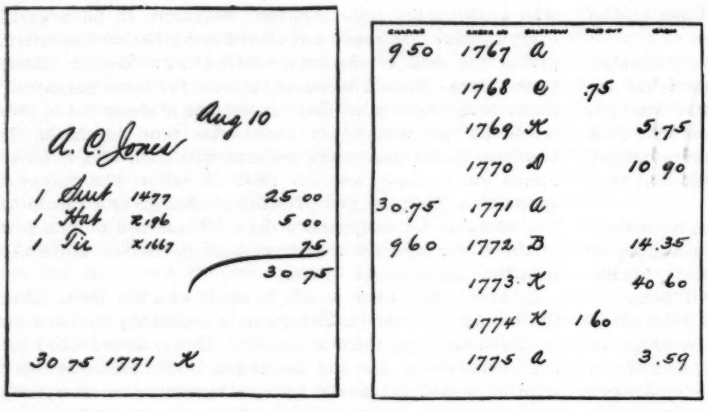
Quincy Show Case Works



Egry Register Co.

A sales check filled in and part of the summary record of the same sale referring to check No. 31

from the simple to the complex. They tell the date the sale was made, by whom, and its amount in dollars and cents—or in any currency, for that matter. They tell how many transactions there were in the day and their total value. They give each a consecutive number. They differentiate between charged, paid on account and paid out transactions. They protect the merchant from dishonest or careless employees. They advertise the merchant's business. They are a complete accounting system in themselves. From their slips—made on the spot, and at the instant the transaction is concluded—the merchant can start figuring out the daily balance sheet of his business.



Egry Register Co.

Duplicate of sales check given to customer and record of same sale on summary register

In the type of auditing machines in which the clerk writes out the descriptive portion of the sales slip or other record a carbon copy is made simultaneously and is delivered to the customer. These roll record registers can be used to cover every possible item. There is no limit to the extent or to the minuteness with which they can be made to enter into details. It is simply a question of the wording of the printed form that is filled out, unrolled and released by a turn of a crank or lever and detached. Among other things, it is possible by this method to keep an accurate accounting of stock; to know from day to day what is being removed from it. In other words, practically a perpetual inventory is established.

The importance of such aids as these cannot be overestimated. That they are appreciated is evidenced by the fact that these machines are now in use in every corner of the world. In every place of business that is newly established or modernized they are among the first items that should be included in the list of necessities.

The delivery system of retail stores has been revolutionized by the use of light and heavy motor cars. Although there is a primary and immediate economy in eliminating the horse, deliveries must be arranged systematically or else that part of the merchant's business is likely to show an ever-increasing leak.

The proprietor of a modern retail store—a grocery, for instance—lays out the necessary number of routes which his wagons must follow as many times a day as may be desirable. He keeps his customers informed as to the time schedule of these delivery wagons. Also he keeps close track of this department of his business, and sees that no time is wasted by his employees.

Yet no matter how carefully delivery routes may be planned and schedules maintained there are always certain customers who wait until the last moment and then demand instant service. The motor wagon is of even greater value in accommodating these. In solving the delivery problem, however, each merchant must do so for himself. Each store's conditions are individual and what might be just the thing for one might not fit the needs of another. To help the merchant out of just such perplexities practically every large automobile company has a staff of traffic experts at its principal offices. Unless the problem is a large and complicated one it can be solved by correspondence with them.

Advertising is one of the great agencies of distribution that no merchant can afford to disregard if he wishes to succeed. Well advertised goods almost sell themselves, because their excellence has been established and made widely known. Therefore the trade in such staples is one that is handled quickly and at a satisfactory net profit. In a vast number of articles the publicity that makes them sell is obtained by the manufacturer. All the retailer has to do is to co-operate. The first step, of course, is made through the newspapers and magazines. Then the manufacturer, in cases where it is practicable, approaches the consumer through samples sent to his home. The retail merchant gets the benefit of the demand thus created.

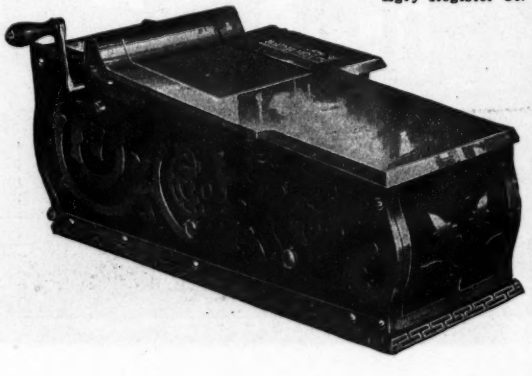
Different methods of "sampling" are employed. For example, within four months three different manufacturers of food products sample a town of twenty thousand population. One had a crew of men to place samples on each doorstep. Another had a force of men who rang the bell, personally handed the sample to the housewife and briefly explained the merits of the article to her. The third distributed his sample and a booklet through the local grocery. Every order that was delivered contained a sample, and each customer who visited the store was given one.

The results showed the importance of the retailer to the manufacturer. From the samples thrown upon the doorsteps orders for three hundred packages were derived. One thousand and forty packages were sold of the article that was handed to the woman who came to the door. Three thousand, one hundred and forty packages were sold of the article handed out by the grocers themselves.

(*Continued on page 80.*)

A roll record register that enables the small store proprietor to keep track of his business

Egry Register Co.



The great terminals at Balboa, showing machine, erecting and tool shop; forge shop, steel storage shed and boiler shop in course of construction; and part of excavation for dry-dock No. 1

THE PERMANENT PLANT AT PANAMA

New Docks, Lighthouses, Workshops, Floating Cranes, Towing Locomotives and Coaling Plants that will Facilitate Handling the Traffic

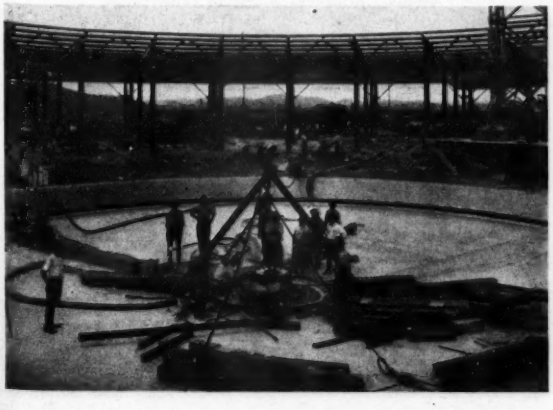
By Waldon Fawcett, Washington, D. C.—Illustrated from Photos Loaned by the Isthmian Canal Commission

ON the eve of the opening of the Panama Canal there has suddenly developed a widespread interest in what is known as the "permanent plant" at Panama—meaning the equipment incident to the operation of the great waterway; the power plants which will supply energy for all purposes; the facilities for repairs and maintenance, not only of the canal locks, but of ships passing through the canal; the aids to navigation; the defenses at the Isthmus; and all the other installations which will contribute to the usefulness of this new channel between the Atlantic and the Pacific as a permanent artery of commerce.

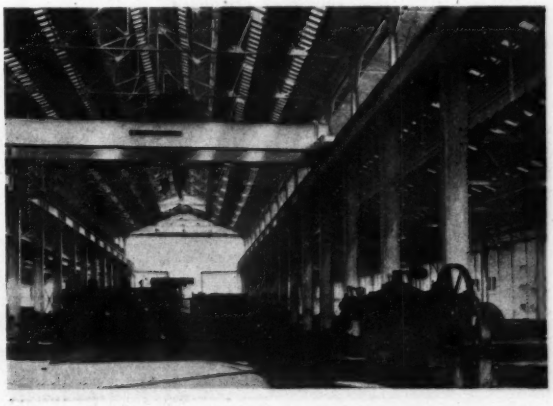
It is no exaggeration to say that the permanent plant in the Canal Zone fully merits the popular interest that has been shown with respect to it, for this final creation of the canal builders—railroad, docks, lighthouses, forts, workshops, and all the rest—is quite as remarkable in its way as is the interoceanic waterway itself. Not only will the voyager to or through the canal have an opportunity to observe a model commercial center established at the focal point where the commerce of the western hemisphere will converge, but the piers, dry docks, floating cranes, shops, coaling plants, etc., will be so complete and so up-to-date as to command the admiration of any man of affairs who is familiar with the standards that obtain in such matters at the principal ports of the world.

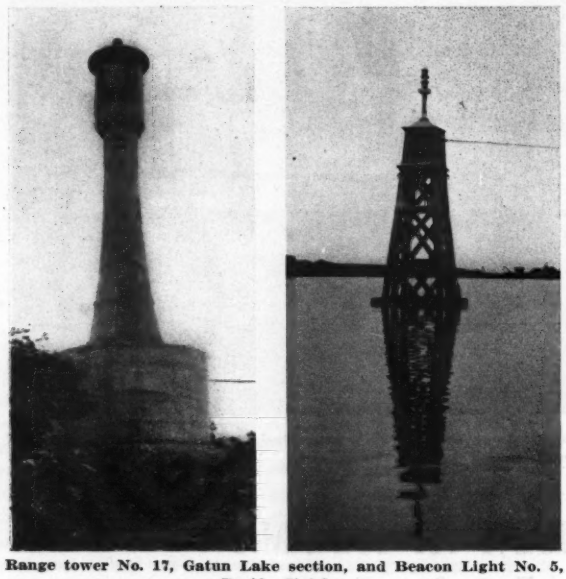
The United States Government will continue to provide living quarters, etc., for the operating force at the canal just as has been done for the construction force. Going further, the American authorities will endeavor to render any service within reason to vessels that reach the Isthmus with depleted stores or in damaged condition. To that end dry docks and repair plants will be at the disposal of the ships and all vessels using the canal will be offered the opportunity to purchase at Government rates supplies of all kinds, cold storage, fresh water and fuel. There will be large coaling plants at both ends of the canal. In general, each plant will consist of two waterfronts and a storage pile, and each will be arranged to receive, store and deliver coal belonging to individuals and companies as well as to the Government. Movable unloading towers and movable reloaders, both running on rails, will be utilized for transfer purposes. At the main coaling plant at Cristobal the United States Government will store—exclusive of the stock of individuals and companies—100,000 tons of coal for naval use; 70,000 tons for canal use and an emergency stock of 30,000 tons. About half as much fuel will be accumulated at the secondary storage plant, located at Balboa. In addition to coal, fuel oil will be supplied at both ends of the Canal. The Government has erected four steel tanks, each 93 feet in diameter and 35 feet high, the capacity of each being 42,000 barrels of oil. Furthermore, the Government will lease to individuals and companies, on revocable leases, land for the erection of oil tanks, and will install the necessary oil-pumping

Placing center bearing for turntable at round house of Balboa Terminals



Interior view of boiler shop at Balboa, showing 60-ton overhead crane in place





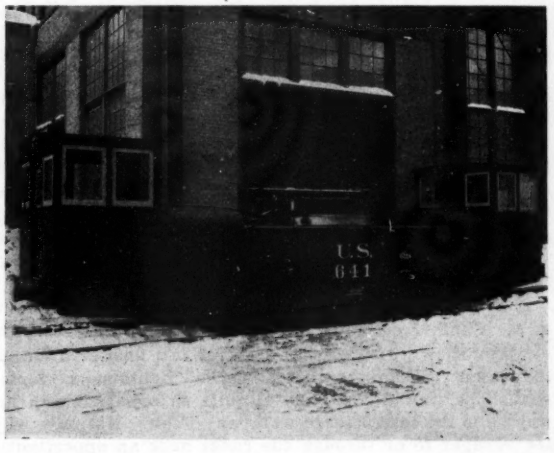
Range tower No. 17, Gatun Lake section, and Beacon Light No. 5, Pacific division

plants at the waterfront, with oil mains running to the tanks.

A full-fledged industrial plant of formidable proportions is rising at Balboa for repair work at the Isthmus. All of the buildings have steel frames and are of permanent construction; the main buildings are provided with overhead traveling cranes and the machinery is of the latest approved type and electrically operated. The principal shops will have floor areas as follows: Machine, erecting and tool shop, 68,000 square feet; forge shop, 32,000 square feet; steel storage shed, 18,000 square feet; boiler shop, 46,000 square feet; general storehouse, 96,000 square feet; paint shop, 12,000 square feet; car shop, 39,000 square feet; planing mill and carpenter shop, 49,000 square feet; lumber storage shed, 67,000 square feet; steel, iron and brass foundry, 38,000 square feet; and round-house, 24,000 square feet. In this plant will be conducted all repairs required by naval and commercial vessels, and also all work attendant upon the upkeep of the canal equipment and the relocated line of the Panama Railroad—this line, of which 40 of the 47 miles is new road, having been constructed at a cost of upward of $9,000,000.

The permanent administration and canal headquarters building at Ancon is a structure which is calculated to impress favorably every visitor to the canal. It contains 75,000 square feet of floor space and represents an investment of $375,000. At Ancon the quarters for members of the permanent operating force of the canal will form a community of considerable size, and the same is true of the permanent settlements at Pedro Miguel, Gatun, Cristobal, Paraiso, etc. In addition to the buildings provided by the Canal Commission, the War Department is expending a sum in excess of $1,500,000 in providing quarters, barracks, storehouses and other buildings for the accommodation of troops stationed in the Canal Zone. Probably 6,000 to 8,000 men will be required to man the various fortifications which are being erected as defenses of the canal. This military force will be in addition, of course, to the operating force, which will comprise 2,500 men, so it is evident that there will be a considerable permanent population in the Canal Zone in addition to the representatives and employees of private corporations which may establish themselves there in order to do business with the passing ships.

An important feature of the permanent plant at the Isthmus will be the piers for commercial use. Those at Balboa will be 1,000 feet long and 201 feet wide, with 300-foot slips between. Another pier and two wharves are located at Cristobal, and arrangements have been made for erecting at this point four additional piers if the volume of commerce seems to warrant it. At Balboa, vessels reaching the canal in damaged condition will find a dry dock 1,000 feet in length and consequently capable of accommodating any vessel that can pass through the canal locks. A second dry dock, 350 feet in length, will accommodate smaller vessels, and on the Atlantic side the dry dock at Mount Hope has a usable length of 300 feet. Two floating cranes—the largest and most powerful in the

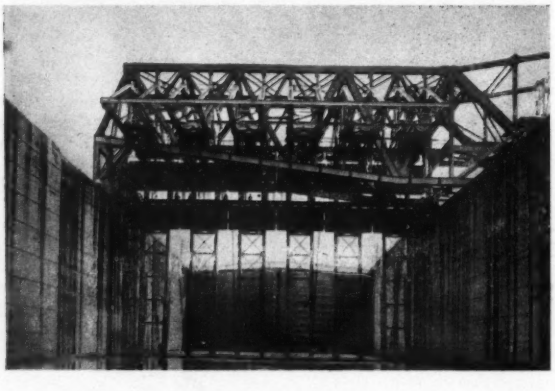


Courtesy General Electric Co.

One of the 40 electric towing locomotives for hauling vessels through the locks of the canal

world—will be provided to assist vessels that may need their aid, and these cranes will be adapted to wrecking operations as well as commercial work. They will be able, upon occasion, to pick up the leaves of the lock gates or lift out of the way any obstruction that might interfere with the operation of the canal.

Emergency dam across Pedro Miguel Locks, showing dam and lock gate fully completed



General view of Mt. Hope dry-dock shops and Paraiso pontoon bridge in course of construction

COLONIAL EXHIBITION AT SEMARANG

For the Promotion of Agriculture, Trade and Industry in the Dutch East Indies

WHILE the number of international expositions held each year shows a general tendency to decrease, those that are in course of preparation are as a rule more or less specialized, either as regards the industries represented, or the geographical region covered by the exhibits. This is the case with the General Colonial Exhibition to be held at Semarang, Java, from August to November of the present year. This exhibition has been organized with the approval and active co-operation of the Governor-General of the Dutch East Indies and the colonial officials. A large special committee has charge of the promotion of the exhibition in Holland and for the whole of Europe. The representative of the exhibition for the United States is Mr. T. Greidanus, 136 Water Street, New York, through whose courtesy the accompanying illustrations are reproduced.

The exhibition grounds cover an area of about 75 acres and the principal exhibition halls are constructed of iron with fireproof walls. The Machinery Hall will be filled principally with foreign exhibits of machinery, implements and apparatus suitable for the leading native industries of the Dutch East Indies. The rapid development of the agricultural and horicultural industries of the Dutch East Indies has created a large demand for modern machinery, and particularly labor-saving devices. A special hall has been erected for the sugar industry, which will include not only exhibits of the latest machinery, but a complete laboratory. The grounds adjoining this building have been planted with the varieties of sugar cane found to be best suited for the different districts of Java.

Another interesting building is the Tobacco Pavilion, surrounded by plantations of Java and Sumatra tobaccos. In the same way the many spices and plants, the products of which are used for the manufacture of drugs and medicines, grown in this part of the world, will be shown in a special pavilion, with plantations surrounding it in which the various plants, shrubs and trees from which these products are obtained will be set out. Another large area has been reserved for the cultivation of tea, cinchona bark, coffee, cacao, rubber, pepper, nutmegs, etc. These exhibits are in charge of the Dutch East Indian Agricultural Syndicate. Other sections will show the principal native industries and native arts and crafts, including the plaiting and weaving of hats and mats, the work of armourers, leather workers, brass and gold workers, wood carvers, etc. There will also be an archeological section and a very complete exhibit by the Colonial Government of Java, with special exhibits from the neighboring colonies of Sumatra, Borneo, Celebes and Ternate. It is expected that many of the more interesting of these exhibits will, on the close of this exhibition, be packed for shipment to San Francisco, where the Government of the Netherlands is planning to make a very comprehensive exhibit in behalf of its colonies in the Far East.

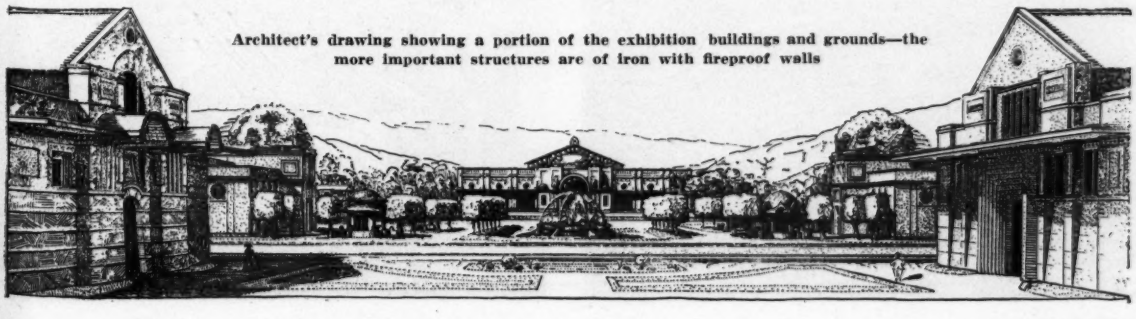
A Chinese dwelling house at Semarang, where the exhibition is to be held

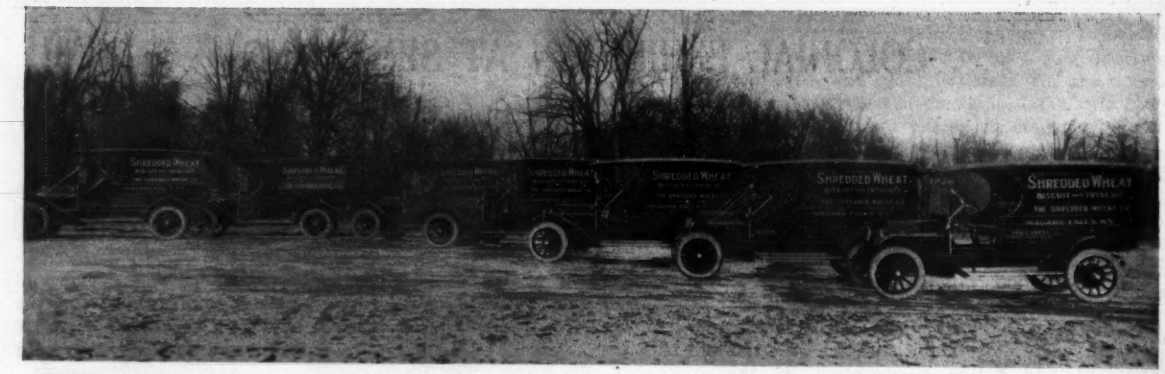
Building of the Chinese Council at Semarang, where the trade with China is very large

Semarang, where the exhibition just described is to be held, is situated at the very center of the entire Dutch East Indies. At the beginning of the 17th Century it was little more than a native village, but during the 18th Century it becam the administrative center of Northern Java and a formidable competitor of Batavia. In 1870 the first railway in Java was begun, running from Semarang to Solo, and since then the development of the port has been very rapid. At present a large number of foreign houses maintain offices at Semarang and a network of railways connects the port with every part of the island.

The Colonial Administration of Java is entitled to a great deal of credit for the excellent system of railways and tramways in the island, some of which have been constructed by the Government and others by private companies. Heavy grades were frequently encountered and numerous steel bridges—some of them of considerable length—were necessary.

Architect's drawing showing a portion of the exhibition buildings and grounds—the more important structures are of iron with fireproof walls





Willys-Overland Co.

The delivery system of retail stores has been revolutionized by the use of light and heavy motor cars. Many department stores have "fleets" of a hundred or more light delivery cars and heavy trucks

MODERNIZING THE RETAIL STORE

(*Continued from page 76.*)

Another method that manufacturers use to build up a business for the retailer is by the use of premiums. The soap industry is probably more closely identified with the premium business than any other. Condensed milk, tobacco and coffee concerns are close seconds. It may interest the retail merchant and others to know that the soap and condensed milk concerns spend on their premiums from one-fifth to one-half of one cent per coupon redeemed. A fair average is one-third of a cent. This means that a knife costing four dollars a dozen, or 33 1-3 cents each, is given out for one hundred coupons. This is based on the factory cost of the premium, without calculating the overhead cost of running the premium department, which includes the salaries of the manager and his assistants, office rent, mail-order employees, postage on premiums, packing and transportation of goods to stores, store rent, light, heat, clerks, etc. This brings the cost of redeeming each coupon up to an average of one-half of a cent.

W. B. McLean Mfg. Co.

A novel seating arrangement for confectionery and drug stores, the chairs nesting under the tables

While many of the illustrations in this article show modern store fixtures of various kinds, no attempt has been made to describe these in detail as such a task would be entirely impossible within the limits of the space here available. There are special fixtures on the market for practically every branch of retail trade, including showcases and cabinets expressly designed for jewelry stores, others for cigar stores, still others—in the greatest diversity—for dry goods merchants, and so on. For the haberdasher, the milliner and similar lines still other fixtures are available, while for hardware stores entirely different designs and arrangements are offered.

A great deal has been written and printed and said in many languages the last few years about the way the great mercantile establishments are crowding out the small retailers in every large center of population everywhere. But the pendulum has begun to swing in the other direction. The most remarkable retail development of New York, for example, in the last ten years, has not been in the great commercial palaces of the department stores, but in the multiplication of little shops. This is especially noticeable along Fifth Avenue and in the side streets leading into that wonderful thoroughfare.

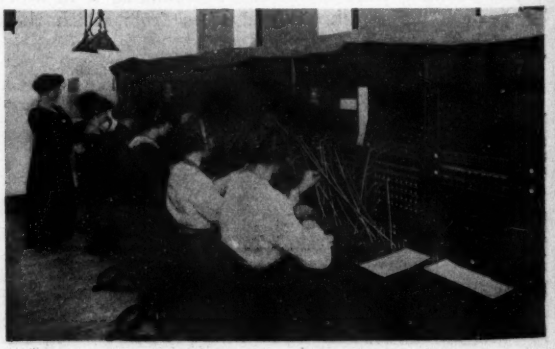
These little retail stores thrive and multiply because each has a certain individuality about it. In them the customers can purchase what they wish, not what the shopkeeper is most desirous of selling them. Thus the secret of their success—and of the success of any retail merchant—is in humoring the individual tastes of patrons. This cannot be done in a huge establishment, but it can be done in a small one. If it is done, and if the merchant avails himself of modern ideas and works hard and intelligently, he can hardly fail.

The light car pays for itself many times over for merchants making frequent deliveries over wide areas

Adams Bros. Co.

The telephone is an important adjunct of efficient merchandising—switchboard in a New York department store

New York Telephone Co.



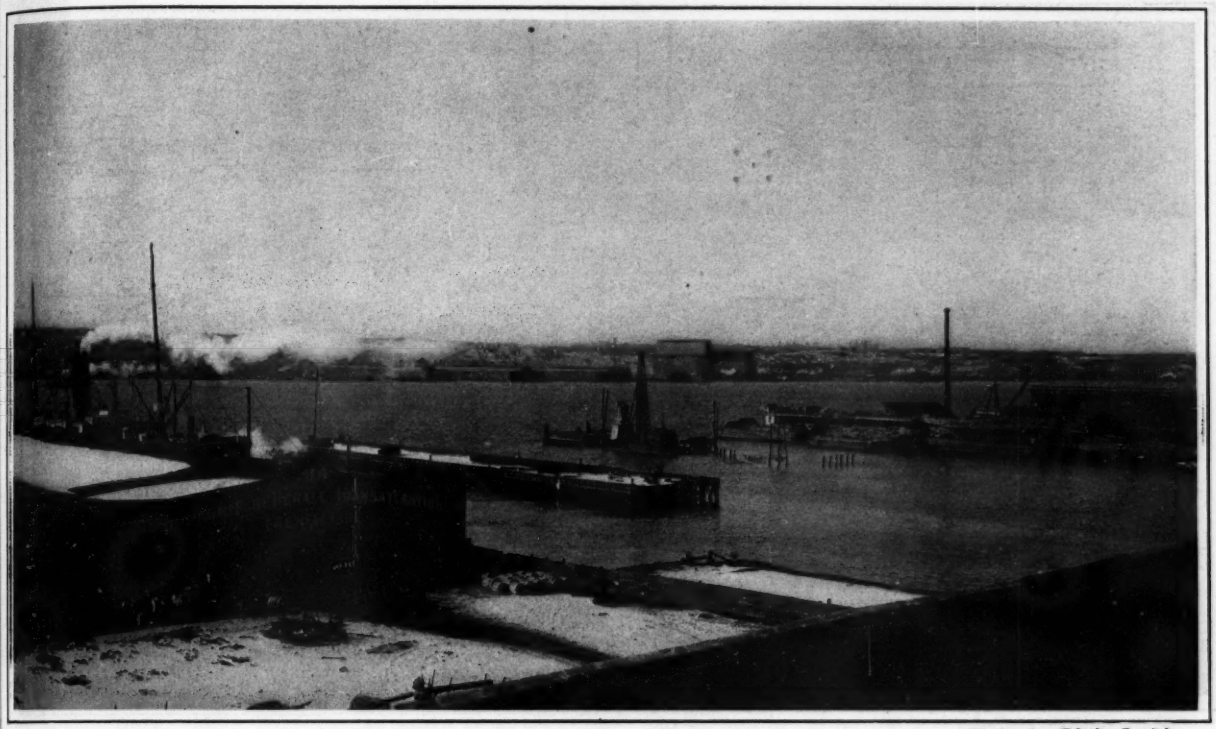
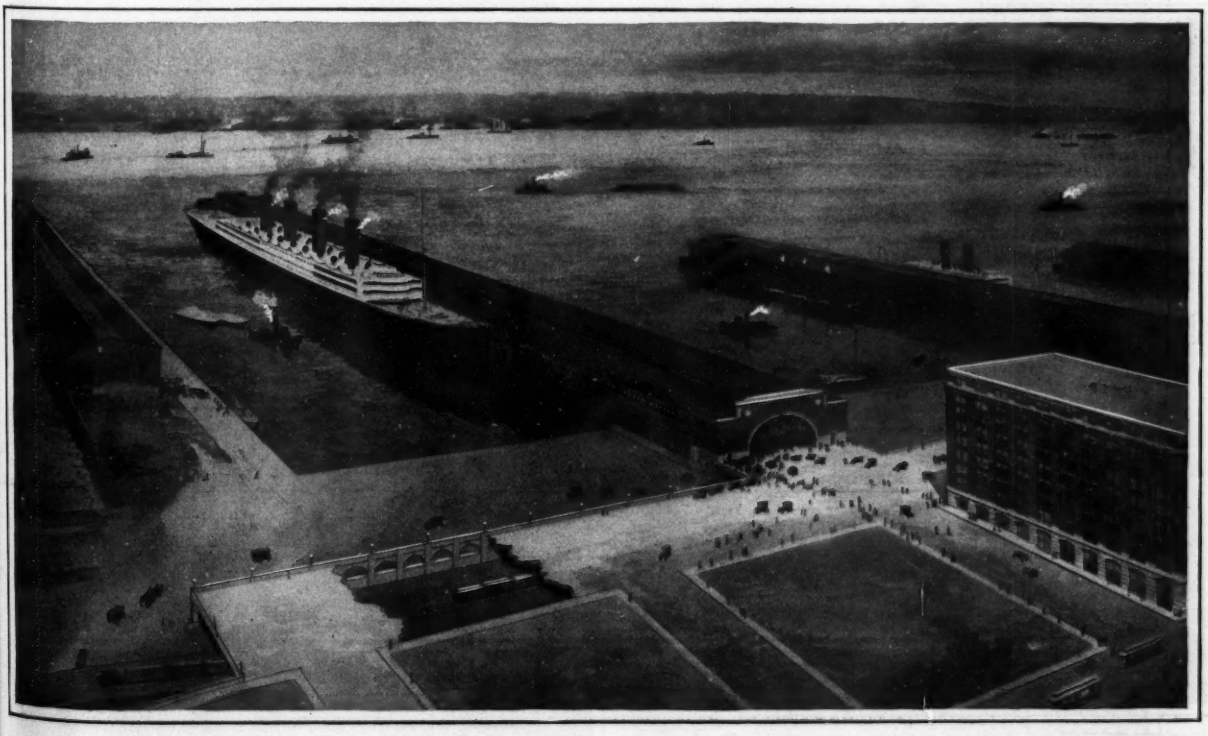


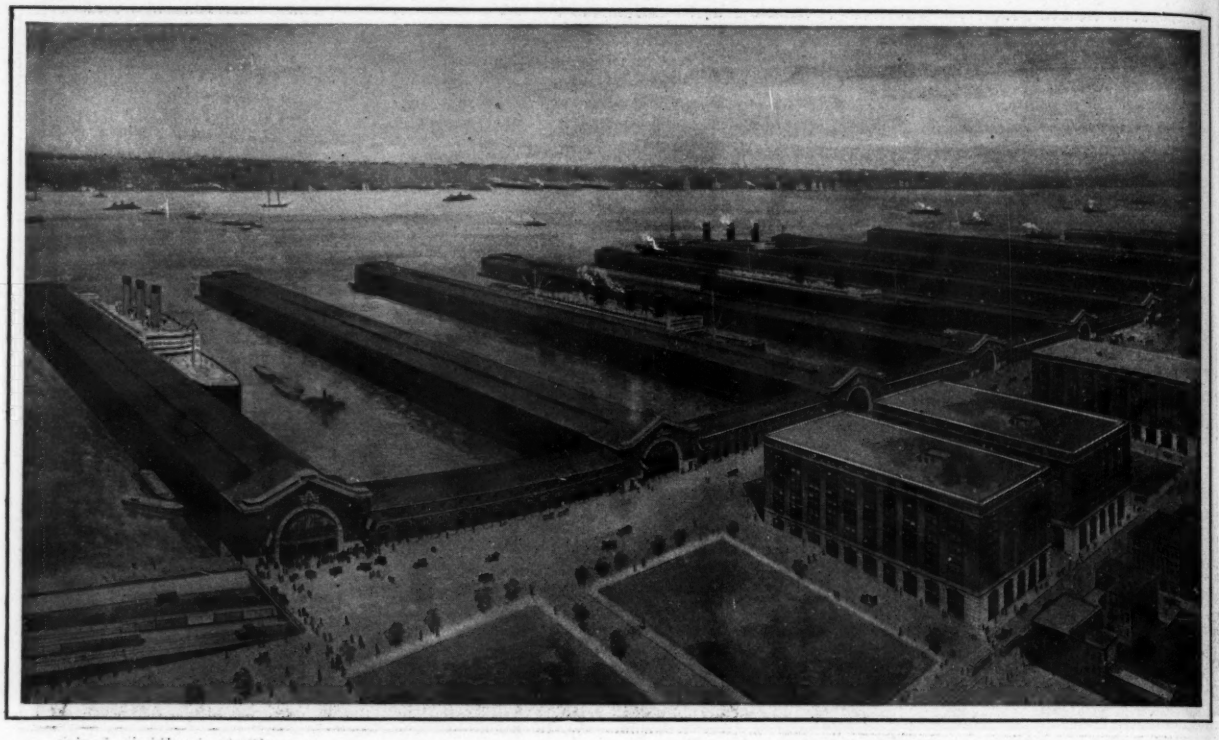
Photo. by Edwin Levick.

PREPARING FOR 1,000-FOOT SHIPS AT NEW YORK

ACCORDING to statistics prepared by the Department of Commerce at Washington, New York is now the greatest seaport in the world, with a total of 14,464,161 tons of shipping entered in 1913 and 14,370,619 cleared. While various factors have tended somewhat to delay progress in this direction, the municipal authorities are steadily improving the facilities of the port. At present the greatest need of shipping is the speedy construction of piers large enough to accommodate the gigantic ocean liners of 900 feet in length and over, two of which are about to make their maiden voyages to the port this spring.

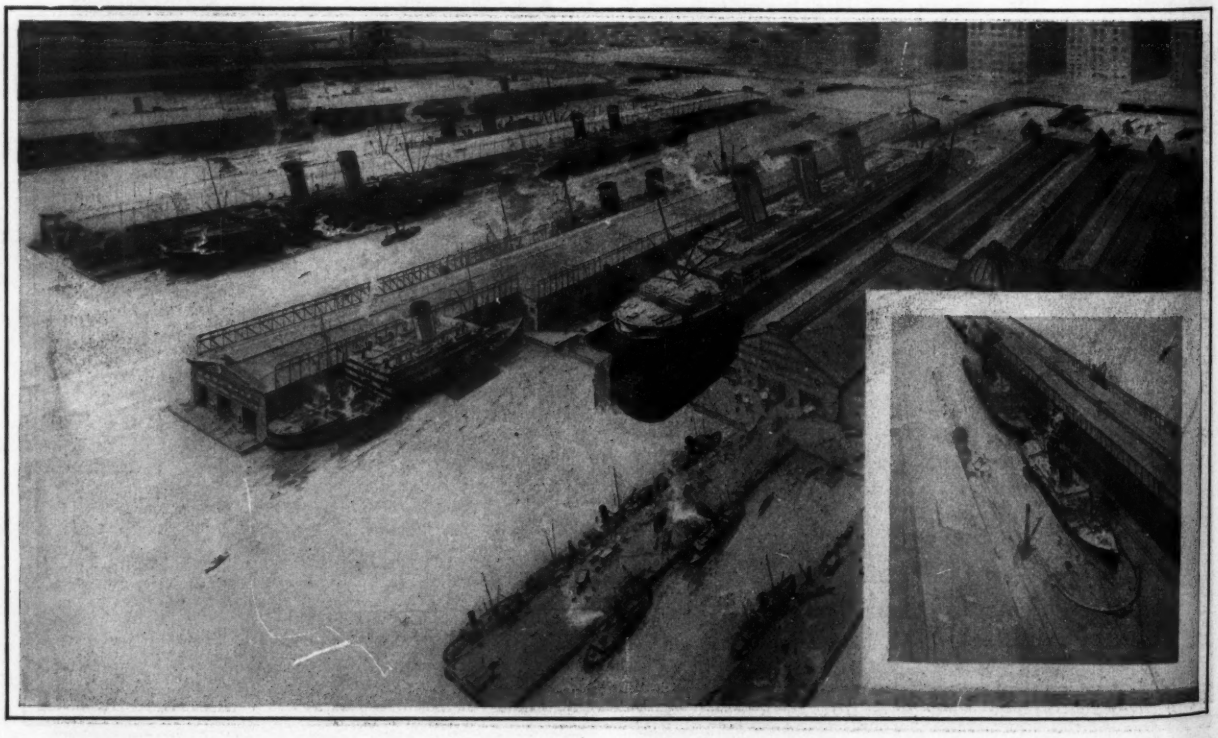
The accompanying illustrations, for which we are indebted to the Chamber of Commerce of the State of New York, will serve to give a general idea of the proposed new piers and of the great dry dock also to be

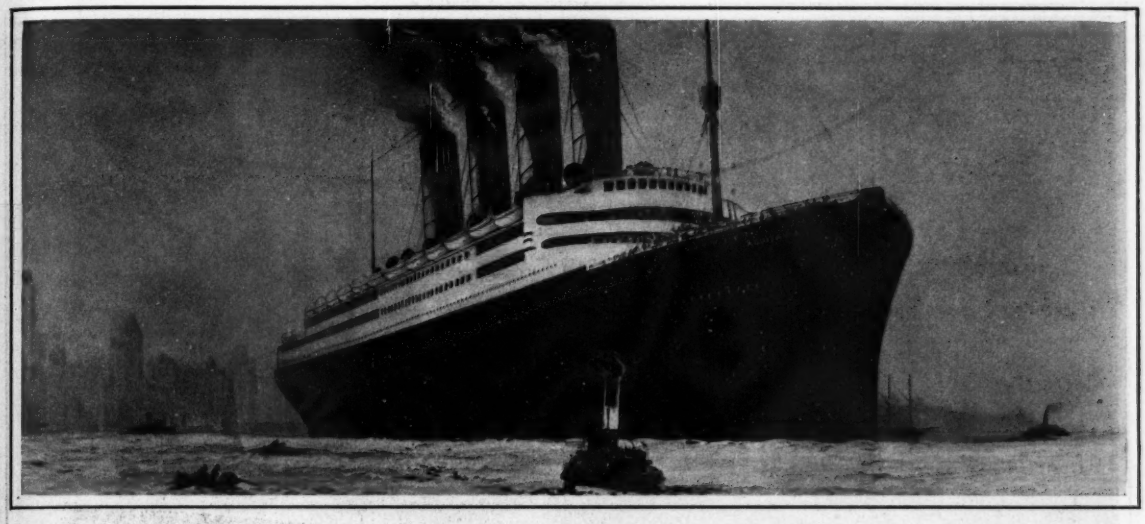




constructed in the near future. The illustration at the top of page 81 shows the North River waterfront near 44th Street, Manhattan, as it now appears. This valuable shore property belongs to the municipality, but—as the illustration clearly indicates—the present returns from a considerable part of it are much less than the annual cost of maintenance. The lower illustration on the same page shows the same territory as it will appear when improvements are completed.

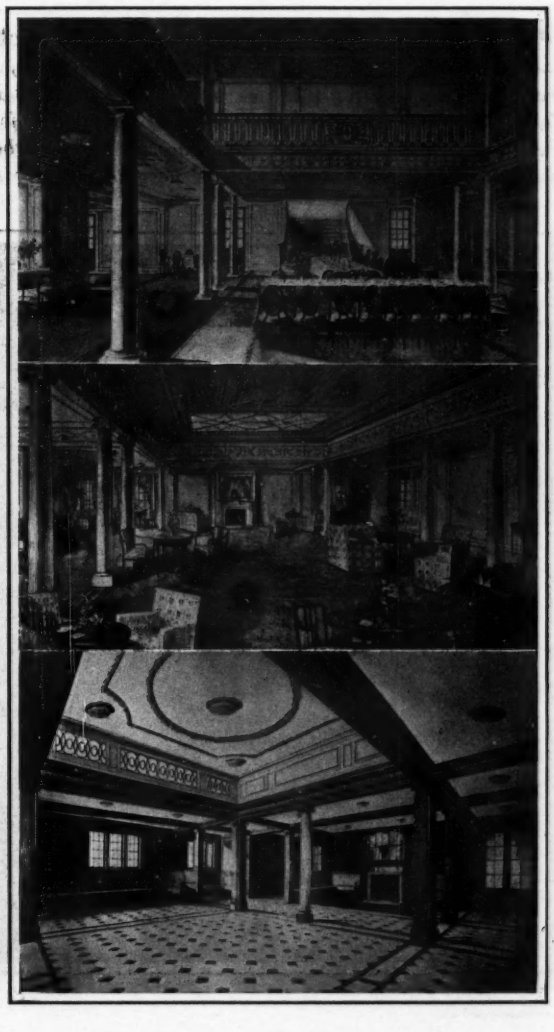
THE upper illustration on this page shows a group of the new 1,000 foot piers. It also illustrates how the territory north of 46th Street may be improved, gradually, to meet the demand of commerce so that the City may preserve its supremacy as the first port of the world. The view at the foot of this page shows the combined wet and dry dock proposed by Dock Commissioner R. A. C. Smith, to be located at 35th Street, South Brooklyn, and to be also 1,000 feet in length.

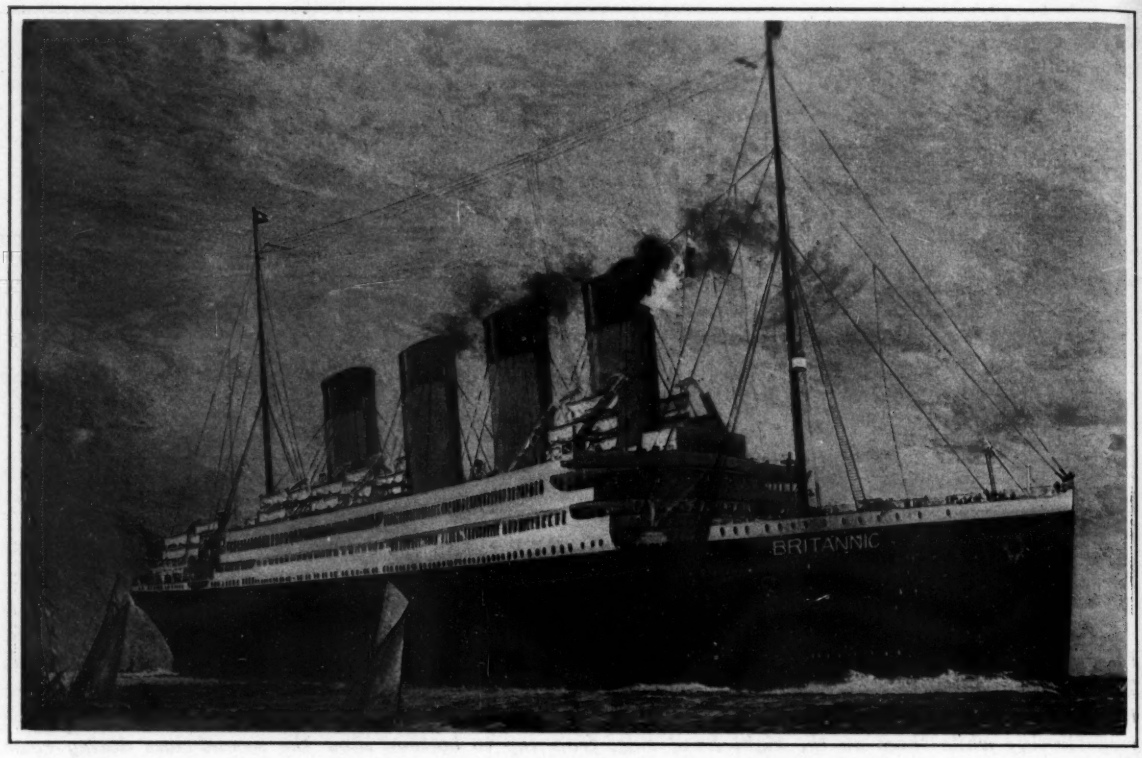




THE NEW CUNARD LINER "AQUITANIA"

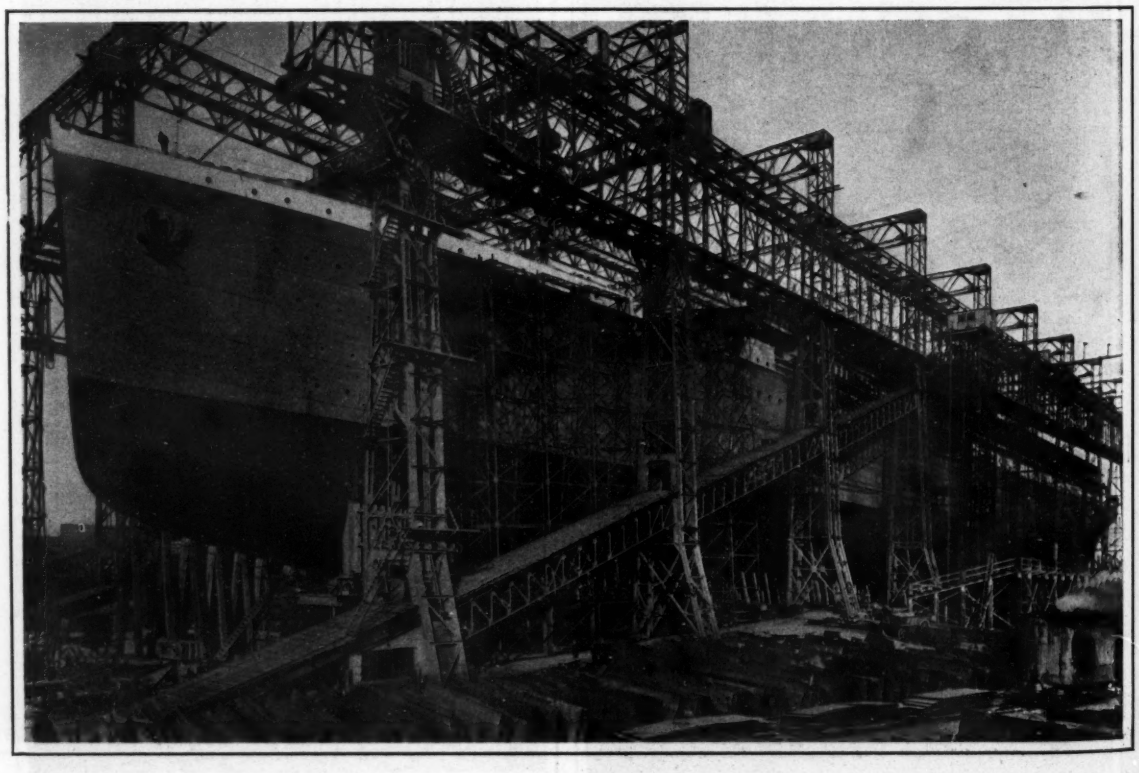
THE accompanying illustrations give some interesting views of the new Aquitania which makes her maiden trip to New York from Liverpool May 30. This splendid vessel is 901 feet long overall, 97 feet beam and 64 feet in depth and displaces 55,000 tons. The normal sea speed provided for is 23 knots per hour. The ship will accommodate a total population of 4,210, of which about 1,000 constitute the crew. The illustrations below, at the left from top to bottom, show the first-class smoking room, restaurant and lounge rooms, respectively; while those on the right hand side, from top to bottom, show the second-class dining room, drawing room and smoking room.





THE NEW WHITE STAR LINER "BRITANNIC"

THE illustrations on this page show architect's drawing of the new Britannic and a photograph of the vessel just before its launching at Belfast, February 27, 1914. The new Britannic is almost exactly twice as long and ten times as large as the first Britannic, built in 1874. The earlier vessel was 455 feet long, 5,004 tons gross register; the new Britannic is nearly 900 feet long and 50,000 tons gross register. This vessel will ply between Southampton and Cherbourg and New York, but no date has as yet been set for her maiden voyage. She will have accommodations for 2,500 passengers and 950 crew.



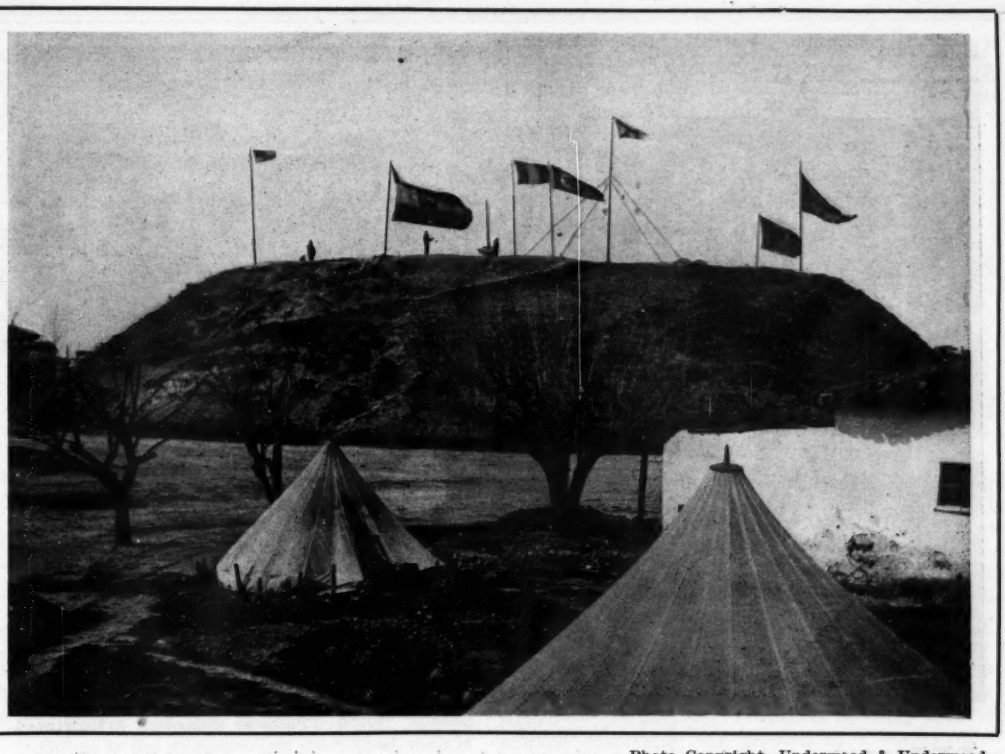


Photo Copyright, Underwood & Underwood.

THIS illustration shows the interesting ceremony of hauling down from the Turkish fortress at Canea the last of the flags of the six nations protecting Turkish domain over Crete. The Turkish flag is seen in the center, surrounded by those of England, France, Austria, Germany, Italy and Russia—this arrangement being symbolic of the protection of Turkey by these powers.

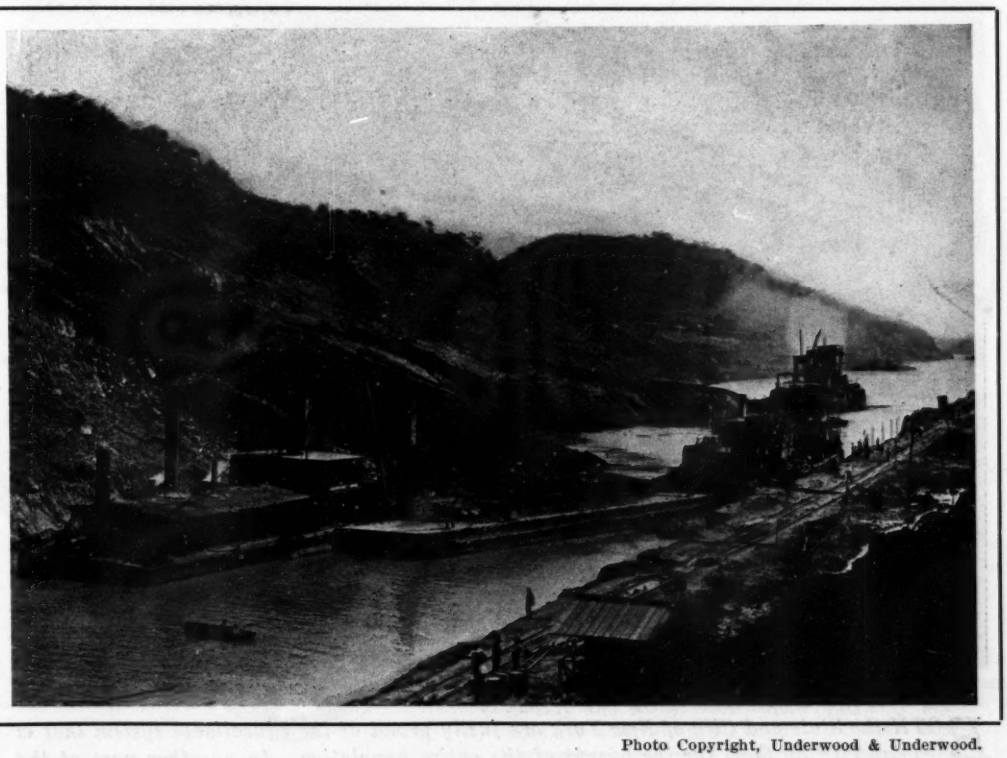


Photo Copyright, Underwood & Underwood.

SINCE the admission of water to the great locks, and the flooding of Gatun Lake, made it possible to bring dredges into Culebra cut, the work of removing the Cucuracha slide has been proceeding steadily, and recent telegraphic dispatches state that this last obstruction to the completion of the canal has now been sufficiently removed to enable the passage of large ocean steamers.

Photo by Underwood & Underwood

WITH the approach of summer the great beaches in the vicinity of New York City are beginning to prepare for the throngs that will visit them during the height of the season. While New York has winters during which storms of almost Arctic severity sometimes occur, as was notably the case this year, its summers are extremely hot, particularly during the months of July and August. This picture was taken on the beach at Coney Island.

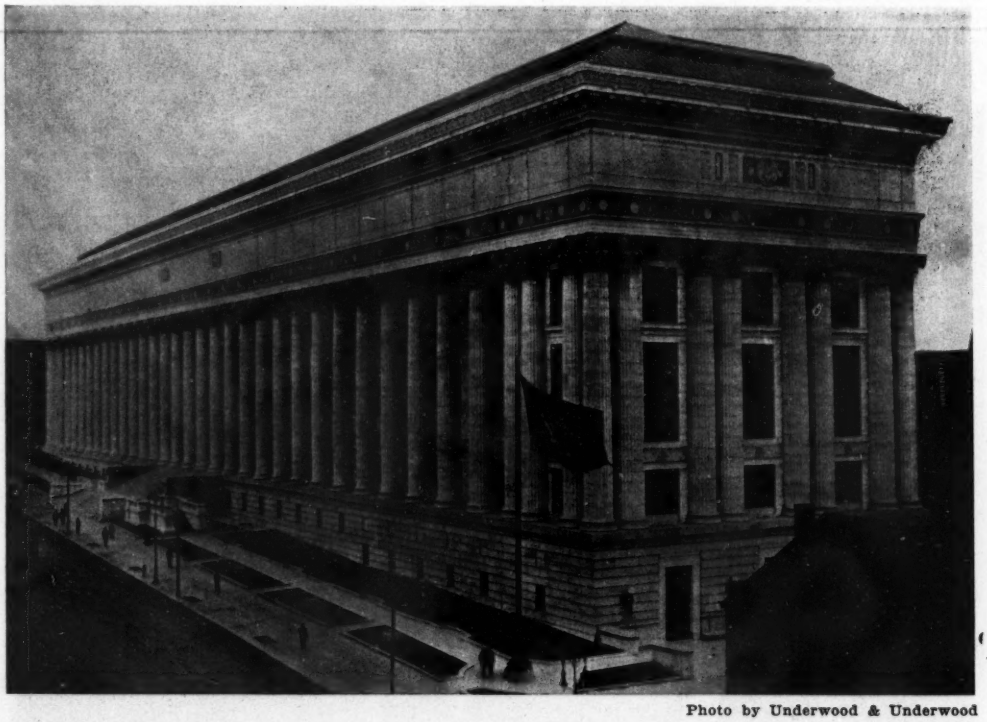
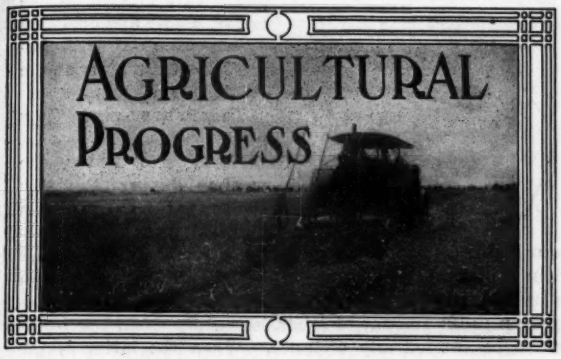


Photo by Underwood & Underwood

BOTH the State and City of New York are justly proud of the educational system that is maintained by them for the benefit of the entire population. In no other part of the world are such vast sums so cheerfully expended by the people in the cause of better education. This illustration shows the new State Educational Building at Albany, the State Capital, where the activities of the State Department of Education are directed.



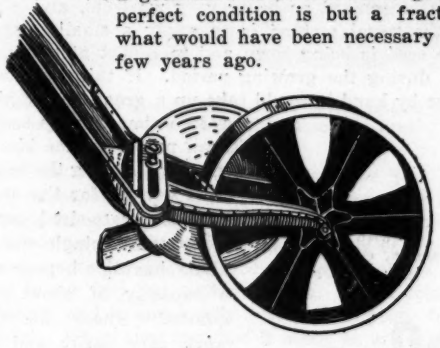
HANDY TOOLS FOR THE LAWN AND GARDEN

Inexpensive but Efficient Implements for Keeping Lawns in Order and Cultivating Vegetable and Flower Gardens

IT has been said that no normal city resident lives who has not at some time felt the desire to move into the country—to own a place where he could have a well-kept lawn and a garden in which he could raise both vegetables and flowers—and this is one of the great factors which have been instrumental in creating the almost innumerable suburban villages which surround the large centers of population. It frequently happens, however, that this desire to potter around things in the garden is but short-lived, mainly because the work required proves to be too strenuous for the would-be gardener, for the majority of city-bred men are unused to manual labor and any especial effort in this direction is for them actual hardship. Nevertheless, there are thousands who take real pleasure in their gardens, and, aside from the profit obtained, renew their health and strength in the outdoor work involved in their care. Most of them give careful consideration to improved methods of cultivation and to such tools and implements as will tend to simplify and expedite their labors, and a ready welcome is thus assured for any article that promises satisfactory results in that direction. The consequence has been the production of so many new devices and improvements on old ones, that to-day the amount of work required to keep a good-sized lawn and house garden in perfect condition is but a fraction of what would have been necessary only a few years ago.

A weed exterminator

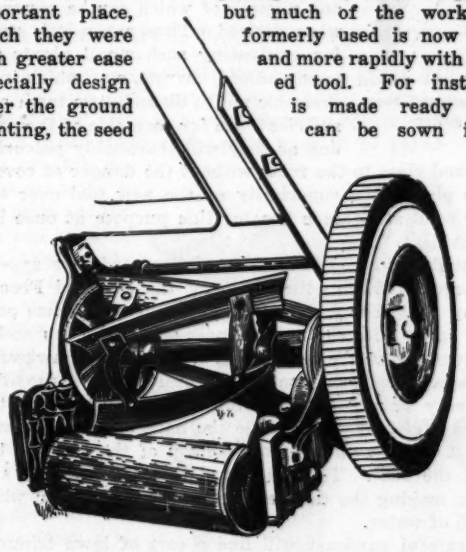
Lawn shears for working under shrubbery



A turf edger for paths, driveways and flower beds saves much time and labor

A well-kept lawn is undoubtedly a source of pride to the owner of every country place, but up to a comparatively short time ago its maintenance in good condition was a matter of constant attention and a good deal of labor. The rotary lawn mower, of course, has been in existence for many years, and even to-day can not be improved upon for keeping the greater portion of the lawn properly trimmed, but around the edges of walks and driveways, near trees and shrubbery and along walls this work formerly had to be done with the assistance of a pair of shears. Now, however, this task is rendered quite as easy as that on any other part of the lawn by using the one-wheel mower, an illustration of which is given herewith. The turf-edger has taken the place of the old-fashioned edging hoe, with its long straight handle, for trimming along paths, drives and around flower beds, and as it does this work almost as fast as a man can walk, no one who has ever used the edging hoe needs to be told how much time it saves. Disfiguring weeds on a lawn are now easily disposed of by the dandelion exterminator, a long-handled device with a chisel at the end, which is thrust into the ground under the plant and cuts through the root. Then a few drops of kerosene or other weed-killer is dropped on the root from the hollow tube in the handle and its fate is settled. After the lawn has been trimmed the cut grass is removed by a rake specially designed for the purpose. It gathers up every blade of grass without disturbing the ground, as a steel-toothed rake would do, and can be cleaned by giving it a push in the opposite direction. For the garden, the old standbys: rakes, hoes and spading forks, still occupy an important place, but much of the work for which they were formerly used is now done with greater ease and more rapidly with some especially designed tool. For instance, after the ground is made ready for planting, the seed can be sown in a wonderfully short space of time with a patent seeder—this implement opening the furrow, dropping the seed, one, two, three or whatever number of inches apart that may be required—covering and pressing down the soil and at the same time marking the next row to be followed. Some of these seeders can, by removing the seed chamber and substituting therefor various simple attachments, be quickly and easily transformed into very efficient wheel-hoes for cultivating the crops. Another inexpensive but extremely handy little implement for this purpose is what is known as the wheel-cultivator. This device is made in two styles, one with a single wheel and the other with two wheels, the former being used for cultivating between rows and the latter on both sides of a row. They are especially suited for use where the rows are close together, and will do better work in one-quarter of the time that

A compressed air spray pump



A handy one-wheel lawn mower designed for working close to walls

would be required if it had to be done with the ordinary hand hoe.

Another contrivance of considerable merit is the hand corn-planter, an implement that is a great time saver when a large amount of that grain is being planted. Its operation is as simple as pushing the point of a stick into the ground, a slight pressure of the foot dropping and covering the required number of seeds at the proper depth.

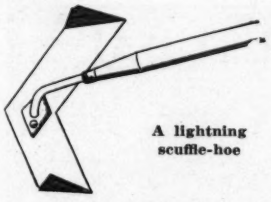
When the gardener takes pride in the quality of his product, be it vegetables, flowers or fruit, he finds it necessary to obtain some kind of spraying apparatus in order to prevent the insects from devouring it before it reaches maturity. The simplest way in which this can be done is with an ordinary watering pot, and while this is better than nothing it means much work and a great waste of material. The up-to-date man therefore will invest in a small compressed air sprayer, the cost of which is very slight, considering the many advantages it offers. The most approved sort for a small place can be strapped on the back and easily carried around, and while it uses a remarkably small quantity of material it is wonderfully effective on trees or plants because of the infinitely fine spray it delivers under pressure.

Corn planter worked by hand and foot power

In those instances where it is necessary to cultivate the vegetables or flowers by what may be termed hand methods, no better tool can be found for the purpose than what is called the adjustable spring-tooth hand hoe. This implement comes with five teeth, any number of which can be removed when desired. Thus, when it is used for cultivating such small plants as young onions, carrots, etc., which it is desirable not to disturb, two teeth are sufficient, one for each side of the row, and as they will thoroughly pulverize the ground close to the roots without the danger of covering the plants, the superiority of the new tool over the regular solid steel blade hoe for this purpose at once becomes evident.

Although not by any means new, few gardeners appear to be acquainted with the merits of the so-called French watering pot. The watering can in general use has only a short spout with the main handle across the top and a supplementary handle on the side, making it very awkward to manage. The French pot, on the other hand, is provided with a very long spout, which renders it easy to direct the water to a distant point, while the handle is in the form of a half circle, running from the top of the front to the base at the rear. Thus the hand can be placed at any position, making the can very easy to manage, even when it is full of water.

The careful gardener will find a sort of lawn trimmer that works on the principle of a horse-clipper a very convenient tool to possess. It is operated by a long pair of handles set at right angle to the blade, enabling it to be used under low-growing shrubs or other species of plants without cutting their leaves and without stooping. An improved style of pruning shears is now available, that will cut through quite a thick branch with surprising ease, and if it is necessary to trim off limbs beyond the reach of a man standing on the ground, a ladder is dispensed with by using an ingenious combination of saw and shears located on one end of a pole and operated by means of a wire connection with a lever at the other.

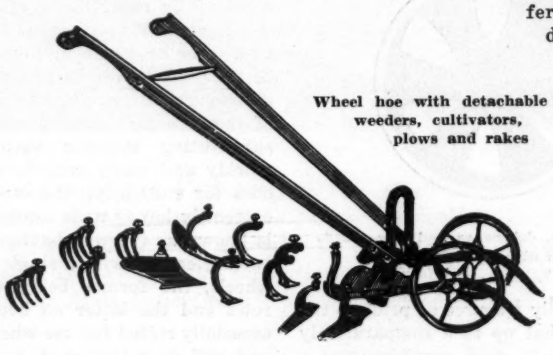


A lightning scuffle-hoe

There are very few places where it is not necessary to water the garden during the dry spells that are certain to occur at more or less frequent intervals. This is a comparatively simple matter when a flow of running water is at hand and a hose can be used, but when this convenience is not obtainable it involves a great amount of labor, especially when the water has to be carried any distance. When the latter is the case, no better means has ever been devised for doing the work than the improved barrel truck. This contrivance consists of a pair of large wheels, a semi-circular axle and a long double handle. On each side of a barrel, slightly above the center, is fastened a trunnion which will fit into sockets at each end of the circular axle. When the barrel is filled with water the wheels are run up with the handle in a perpendicular position, which, being pulled down, engages the sockets with the trunnions and lifts the barrel off the ground. The barrel thus becomes mounted on wheels and it can be moved from place to place with very little exertion. A sprinkler attachment, to be fastened at the bottom of the barrel, will be found useful for watering lawns, paths, walks, etc. The barrel truck is employed to rapidly increasing extent by gardeners who believe in the efficacy of giving growing plants an occasional treatment with liquid manure, while the truck itself will handle any other kind of barrel, wine, spirits or oil, by attaching a pair of trunnions to its sides.

Three and five-prong cultivator hoes and three-prong weeder—useful for close cultivation

There is a general belief prevailing among modern gardeners that an occasional application of commercial fertilizer is decidedly advantageous, experience having demonstrated that the growth of the plant is thereby stimulated, making it more tender and better flavored, and at the same time resulting in a larger yield. Broadcasting is recognized as being very wasteful, and consequently the usual method is to apply a small quantity when the seed is being sown and to repeat at occasional intervals during the growing period. If this work were to be done by hand it would take up a great deal of time, and therefore almost every user of fertilizers posseses some kind of distributor. Among the best of these devices for the owner of a moderate-sized garden is a small single-wheeled affair, having a hopper with a capacity of about four quarts. These machines work very easily and will distribute the fertilizer across the furrow or on either side and at the same time mix it thoroughly into the soil.



Wheel hoe with detachable weeders, cultivators, plows and rakes

HOT WATER FOR DOMESTIC USE

A Device that, by the Turn of a Faucet, Supplies Hot Water in any Part of the House

AN abundant supply of hot water is undoubtedly one of the greatest conveniences in the modern home, not only from a sanitary standpoint but also as a matter of actual comfort. Many devices have been introduced for meeting this need, but it is only within a comparatively recent period that anything has been shown to which some objection could not be made. The ordinary kitchen range, with its waterback and its accompanying boiler is, of course, well enough in its way, but it takes up considerable

A complete hot water installation, showing heater located in basement and hot water supply throughout the house

room and in warm weather a fire has to be kept going, which is expensive and disagreeable to anyone who has to be in the kitchen, on account of the heat it creates.

The latest invention for providing a supply of hot water whenever wanted is designed for service in places where running water and gas, either natural or artificial, can be obtained, and it apparently leaves little room for improvement. When once installed it needs no attention and the turn of a faucet brings a steady flow of water heated to a temperature that may be varied whenever desired. This heater, which is known as the Instantaneous Gas Water Heater, may be located in the kitchen, the cellar or in any other place where it will be out of the way and can be connected with the water or gas. The outlet pipe is then connected with the regular pipes that carry the hot water to the different parts of the house, all of which can be done by any one with even a rudimentary knowledge of tools. A small pilot burner is then lighted and left to burn continuously, after which, when any hot water faucet in the building is opened, the pressure of the water as it flows through an automatic valve opens the gas supply to the main burners where it is at once ignited by the pilot and the water instantaneously heated.

The flow of gas is at all times under perfect control and waste prevented by the fact that when the temperature of the water reaches 150 degrees the big burners are automatically shut off, to start up again when it falls below 140 degrees. When the amount of water required has been withdrawn, the closing of the faucet shuts off the gas from the large burners and leaves only the small pilot—which consumes only an insignificant quantity—lighted. But in addition to the convenience and labor-saving features of the instantaneous gas water heater, much is claimed for it in the way of economy. A series of experiments carried on some time ago showed that to heat 50 gallons of water to 118 degrees Fahr. and maintain it at this temperature for 24 hours, using coal at $7 per ton, costs 25 cents, while to supply this amount of water at the same temperature, drawn all at once or a gallon at a time, costs only 5 cents, with gas at $1 per thousand cubic feet. That the merits of these improved water heaters are being generally appleciated, both in the United States and abroad, is clearly reflected in a steadily expanding volume of sales in all countries.

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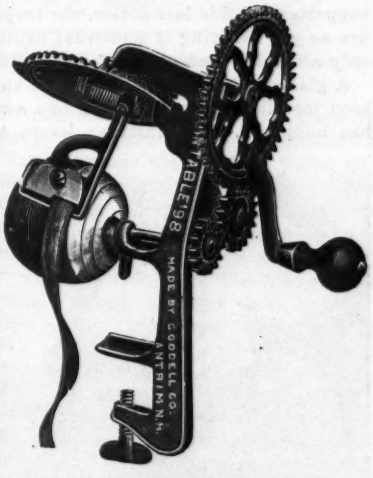
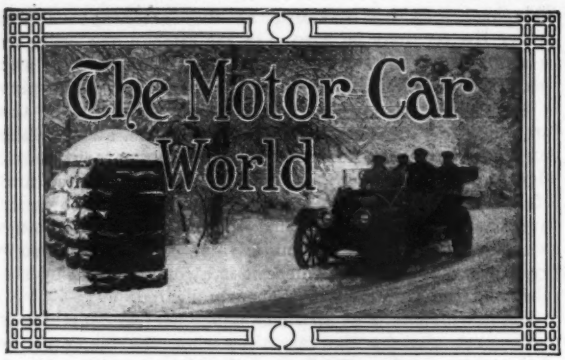
A HANDY APPLE PARER FOR HOME USE

THE accompanying illustration shows a small, light and inexpensive apple parer that has been found to save a great deal of labor in homes, boarding houses and hotels where a large number of apples have to be pared. The frame of this device is made in a single piece and the gears are situated above the apple while it is being pared, so that the juice does not fall on them. The fork is so adjusted that it pares the whole apple, including the end, and there is an automatic push-off which throws the apple from the machine when it is completely pared. The machine can be attached to any kitchen table in a few seconds' time and placed in such a way that the apples will fall in one receptacle and the peelings in another.



A "Turntable '98" apple parer for household use

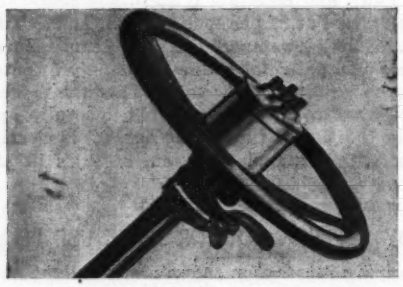
This device is one of a great many similar contrivances that have been patented and placed on the market in recent years by various American manufacturers with a view to lightening the labor of the housewife. For a long time it seemed as though the progress of invention had covered nearly every field of human labor except the kitchen, but at present this important part of the home is by no means overlooked by the inventors, as the heading illustration of this department (reproduced by courtesy of John Wanamaker) clearly shows.



THE ELECTRIC GEAR-SHIFT

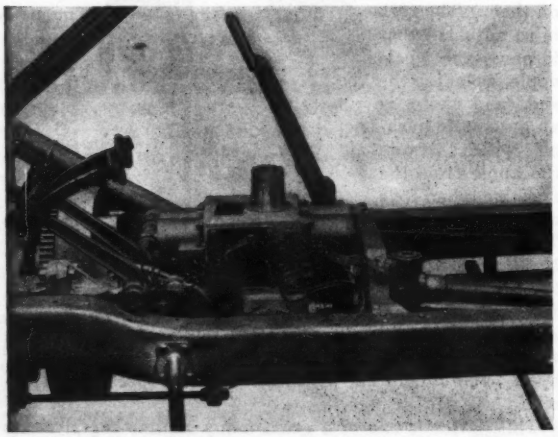
The Latest Step Toward the Complete Electrification of the Modern Motor Car—How the Device Works

WITHOUT doubt one of the most interesting phenomena in the automobile industry is the constant advance that is being made in the use of electrical appliances. The movement began with electric lighting, spread to self-starting, and a variety of minor improvements. Finally there has come the most revolutionary step of all—the introduction of electric transmission and gear-shift systems. While time may possibly bear out the most enthusiastic predictions of the supporters of this last device, the majority of car-builders are as yet receiving it somewhat cautiously, and thus far only a few have adopted it for their 1914 models.



Steering wheel of Haynes car showing "selector" switch

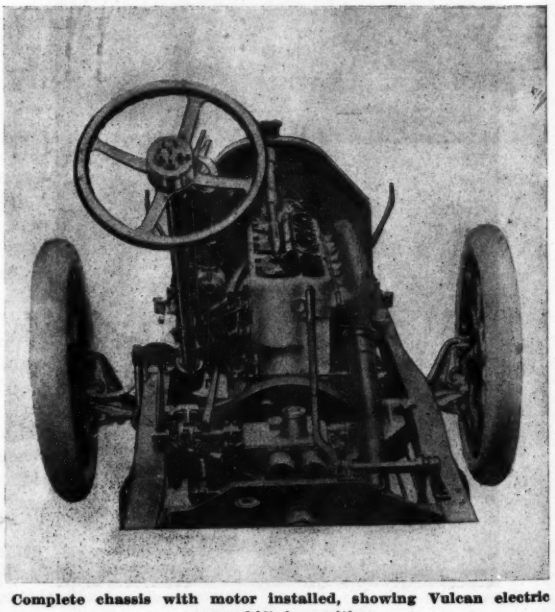
A glance at the cars on which the electric gear-shift has been installed suffices to make one aware that something has happened. The familiar levers to the right of the driver have disappeared and have been replaced by a set of neatly arranged buttons placed on the steering wheel. A child, it seems, should be able to operate a car with this device. Here is a button marked 1, another 2, and so on; if the driver wants low speed he pushes button 1, releases the clutch with his foot, and the car is off at the speed indicated. The same holds true of intermediate and of high speed. There are two buttons marked N and R—meaning neutral and reverse—and two marked S and H, for the starter and horn, respectively. The switch being arranged with a mechanical interlock, there is no possible danger of engaging more than one gear at a time, because only one button can stay down at a time.



Side view of electric gear shift installed on chassis

Another arrangement of push buttons on steering wheel

Every button in the set controls an electro-magnet, or solenoid—one for each speed forward and one for reverse. To the clutch pedal is attached a mechanical neutral device and a small mechanical master switch. This last-named switch completes the circuit to the battery and thus energizes the solenoid. The driver, having selected the desired speed, pushes the clutch pedal all the way down. By this single movement he has released the clutch and drawn the gears from their previous position of neutral; has engaged the mechanical master switch which, by closing the electric circuit to the storage battery, has energized the solenoid selected by the push button and has drawn the gear to position with a pull of 150 pounds. Every change of speed is made in the same way—pushing the proper button and throwing out the clutch.



Complete chassis with motor installed, showing Vulcan electric gear shift in position

Already, it may be well to note, there are two systems in the market. The chief difference between them, simply stated, is that one of them makes use of the storage battery, while the other derives its current from a motor-generator which is carried on the crank shaft and propeller shaft of the car. In this other system, in transmission dispenses with the battery. It is a complete little electric plant in itself. A small battery is carried on the car for starting the engine and for lighting purposes, but that has nothing whatever to do with the gear-shift. In driving a car with this system, the speed of the gasoline motor is controlled identically as when driving with a friction clutch and gear-set.

The new device, in either of its two forms, presents a variety of advantages to the automobile owner. It makes

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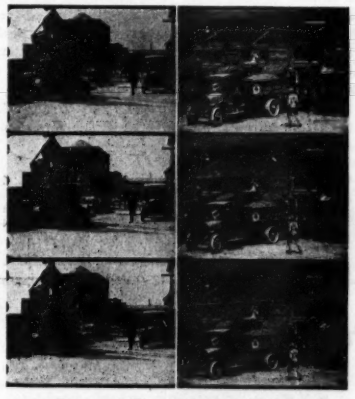
driving a car very much easier and therefore very much pleasanter. Something also is added to safety, because owing to the control being centered in the steering wheel, the driver's attention is undivided and is entirely devoted to the wheel. The purely mechanical improvement is obvious enough. The driver may anticipate his speed change before he throws out the clutch pedal. Stripping gears, with the device, is impossible, because the clutch is always fully disengaged and the gears are always drawn to neutral mechanically before a shift is made. In city traffic the ability to change speed quickly is worth a great deal. And when to all of these is added the cleanliness and neatness which one justly associates with electrical devices, it is easy to share some of the enthusiastic hopes and anticipations of the supporters of the electric gear-shift.

MOVING PICTURES AID SALE OF AUTO TRUCKS

Views of Vehicles Operating under Various Conditions of Great Assistance in Making Sales

AN unique, but at the same time a highly effective and practical method of demonstrating to prospective purchasers of commercial trucks the many different purposes for which these vehicles can be used, is showing them in actual operation under varying conditions by means of moving pictures. While the idea is comparatively new, having been first tried out a few months ago by a motor truck manufacturer at Buffalo, its many advantages so quickly became evident that it is being used to a rapidly increasing extent by salesmen in practically every part of the country.



Courtesy Pierce Arrow Motor Car Co.

Motion picture films showing trucks in actual operation

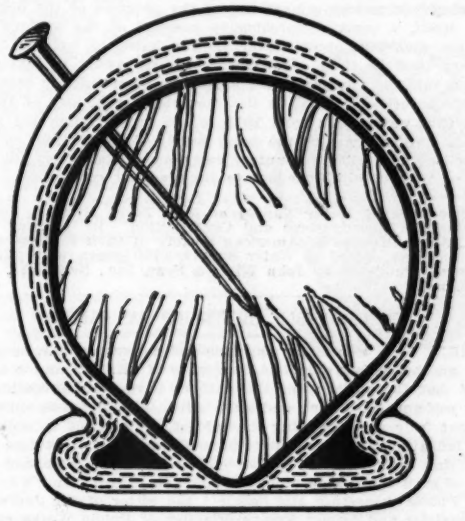
Its principal feature of merit is the fact that it relieves the busy merchant or manufacturer who is contemplating the purchase of a power vehicle for use in his business from the necessity of making a more or less lengthy trip to some locality where he can see the truck working under the same conditions as exist where he intends to use it. Thus, the pictures give representations of the trucks working in brick yards, lumber yards, railroad yards, etc., carrying coal, sand, gravel, cement and other building material; delivering beer for breweries, safes, and other heavy merchandise, and show very clearly the different systems of loading and unloading. The pictures show the trucks operated at the same rate of speed as in actual service, and as an almost unlimited variety of styles of bodies and accessories are shown, the buyer can easily ascertain the kind most suitable for his needs, with the expenditure of only a very slight amount of time—an important consideration to the average man in business.

Courtesy Pierce Arrow Motor Car Co.

An enlarged view of a single film photo—the trucks are shown doing all kinds of every day work

A SUBSTITUTE FOR AIR IN AUTOMOBILE TIRES

MANY suggestions have been offered for eliminating the pneumatic tire, but perhaps none is more novel than a new compound which can be introduced into a tire in place of air while in liquid state, and later becomes en elastic solid. This compound has been in use on many pleasure and commercial vehicles for several years and is said to have proved very effective.



Sectional view of tire filled with a compound claimed to be as resilient as air

The tire filler in question is manufactured in liquid form by special machinery. It is introduced under pressure into pneumatic inner tubes through the usual air valve, all air that may be present being forced out through hypodermic needles. The tubes are thus completely filled—no air space remaining. The pressure under which the compound is forced into the tube depends on the purpose to which the tire is to be put. After a few hours, the filling becomes solidified and forms a highly resilient mass having the same characteristics as air. Any inner tubes can be filled with the compound while still in their casings, the only difficulty being that they must be sent to the factory since it is necessary to employ special machinery for the work.

Fortunately, however, another method is offered by the manufacturers to motorists who find it either inconvenient or impossible to send their tires to be filled. Fabric tubes, filled with the compound, are furnished to motorists when desired.

Perhaps the greatest advantage secured through the use of this elastic compound is that the tires remain hard at all times without any pumping—rim cuts, fabric breaks and blowouts being therefore prevented. Delays, inconvenience and expenses arising from punctures are avoided. The makers claim that the compound has the same resilient properties as air and that it will last as long as the casing—until there is a hole in the casing large enough to open and close continually and thereby wear out the filling at that point. Another invaluable feature is that the filling presents greater safety than can be secured when using air, since a puncture or blowout cannot cause the tire to suddenly become flat while traveling at high speed.

THE CATSKILL WATER SUPPLY OF NEW YORK CITY

ENGINEERS, public officials and others interested in the questions to be solved in providing an adequate supply of pure water to large centers of population will find a mass of valuable information in the 755 pages of this volume* that they would probably be unable to obtain from any other single source. The author has compiled his matter in such an attractive style that the interest of even the lay reader is sustained to an extent very unusual in a work of this character, while the technical descriptions of the means taken to overcome the new problems that constantly arose during the construction of this gigantic undertaking, leave nothing to be desired by the engineer or serious student. In addition to the almost chronological account of the progress of the new aqueduct itself, a most comprehensive account of the various dams, tunnels, etc., that occur during its 120 miles, as well as the machinery used in their construction, greatly assist in making the book a valuable source of reference for those engaged in enterprises of this nature. Included in the contents is a history of the New York City waterworks from 1613 to the present time and a mass of information regarding the water supply of the different boroughs, as well as a detailed account of every step taken, from the inception of the Catskill Aqueduct to its practical completion.

* *The Catskill Water Supply of New York:* History, Location, Sub-Surface Investigations and Construction. By Lazarus White, C. E., Assoc. Member of American Society of Civil Engineers, Division Engineer, Board of Water Supply. 755 pages, with 238 illustrations. Published by John Wiley & Sons, Inc., New York. Price, $6.00, net.

WHERE PUBLIC OWNERSHIP HAS FAILED

THERE have been many magazine and newspaper articles written on the subject of public ownership of utilities, and not a few books, but the majority of the authors have been ill-equipped for their self-appointed task and have either abused public ownership without fully understanding the subject, or indulged in indiscriminate laudation that was equally unreasoning. It is therefore highly gratifying to find a book on the subject by a statesman and economist of such world-wide reputation as Yves Guyot. In *"Where and Why Public Ownership has Failed"** the editor of the *Journal des Economistes* and former French Minister of Public Works presents a masterly array of facts and figures regarding the results of municipal and State operation of public utilities in nearly every part of Europe. As the title indicates, the results of his observations are adverse to the wisdom of governmental intervention in the domain of what have been hitherto privately conducted affairs. The author states in his preface that his "sole object has been to present . . . . a compilation of rigidly investigated facts and figures regarding public ownership and operation," adding that "If I have not been able to affirm that Government and municipal undertakings are efficient the fault is not mine. I have not found them so."

In the 42 chapters that follow M. Guyot presents a mass of testimony and evidence adverse to the claims that Government operation has proved thus far a success in any part of Europe. As to the evidence, that is to say the concrete facts such as balance sheets showing a loss in such operations, his array of facts is both impressive and valuable. When it comes to the testimony has has collected regarding the inefficiency of such operations, however, the reader cannot but feel that the learned author is somewhat inclined to suppress or overlook whatever may contradict his thesis.

Apart from this feature, however—which is perhaps to be expected in a work of so polemical a character—the author's studies are of profound interest and value. He makes it clear that in no part of the world is municipal or State ownership an unchallenged success, and in his masterly analysis of the situation in more than a score of countries both the friends and the foes of Government control of utilities will find much that will merit their careful attention.

* *Where and Why Public Ownership Has Failed,* by Yves Guyot, Editor-in-Chief of the *Journal des Economistes,* President of the Société d'Economie politique of Paris, former Vice-President of the Municipal Council of Paris, Deputy to the French Parliament and Minister of Public Works, etc. Translated by H. F. Baker. Published by The Macmillan Company, New York. Price $1.50.

THE PANAMA CANAL ONCE MORE

FOR any publisher to accept another book on the Panama Canal is in itself a fairly good evidence that the work must have unusual merit, in view of the multitude of such works now on the market. An examination of Mr. Haskin's book on this subject * shows that this is the case. It is a clear and readable exposition of the principal features of the canal, copiously illustrated from protographs taken by the official photographer of the Isthmian Canal Commission. The chapters relating to the manner in which the canal is to be operated will be of particular interest at the present time. The book was submitted to Col. Goethals, who endorses the chapters relating to the engineering features. The chapters treating of the Republic of Panama and the history of the enterprise are the least valuable.

* *"The Panama Canal,"* by Frederick J. Haskin, author of *"The American Government,"* etc. Illustrated from photographs taken by Ernest Hallen, official photographer of the Isthmian Canal Commission. Published by Doubleday, Page & Co., New York. Price $1.35.

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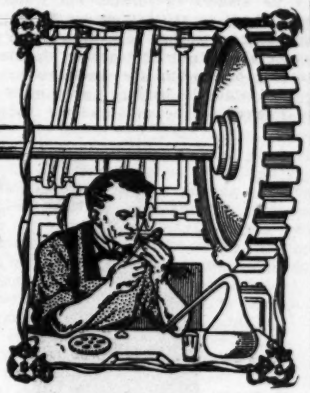


As it is frequently impossible for advertisers to explain clearly the purpose or peculiar merits of their products in the advertising columns, space in this section is placed at their disposal to enable them to do so. It is proper to add that they, and not the publishers, are authority for the statements made.

A Typewriter-Calculating Machine

A MACHINE which is a typewriter and calculator in one, has been put on the market by the Underwood Typewriter Company. As can be seen, the machine is a combination of the Underwood standard typewriter and a simple computing mechanism. The keyboard is unchanged, the mechanism being attached to the figure keys. The person operating the machine can add the columns of a bill or statement, or subtract one amount from another, by pressing the lever at the right of the machine.

The distinctive and advantageous features that make this machine more useful for certain purposes than the ordinary computing machine are that it will write names or descriptions, list amounts in as many columns as may be required, and automatically add or subtract the amounts, in all columns, both vertically and cross-wise, and, if wanted, instructions can be added to a bill without loss of time. The makers of this machine are extensive manufacturers of typewriters as well as typewriter-computing machines. For literature, prices and export terms, address the Underwood Typewriter Company, Underwood Building, New York, N. Y., U. S. A.

Underwood Typewriter and Computing Machine combined—latter electrically operated

A Popular Non-Alcoholic Beverage

THE steadily increasing demand in every part of the world for cooling and refreshing drinks that contain no alcohol is making the preparation and sale of this class of beverages quite an important department in the world of business. While the number of articles of this class is extremely large and being constantly added to, there occasionally appears a beverage that by its superior quality and attractive flavor quickly establishes itself in popular favor, and thereupon becomes an important article of commerce. A drink of this nature is "Sinalco," the demand for which, its makers state, has reached such proportions all over the world that the annual sales of the product have reached many millions of bottles.

"Sinalco" is scientifically prepared by the Sinalco-Aktiengesellschaft, of Detmold, Germany, and sold through a large number of general agencies which have been established in different countries throughout the world. The Sinalco cellars of Detmold, which are well worth seeing, are equipped with the most up-to-date apparatus especially designed for the production of the raw material of this famous drink, known as "Sinalco-Seele" (registered trade-mark), or literally the "soul" of Sinalco. This material is made exclusively from the finest and best-flavored fruit and the purest fruit acids under the management of a certified chemist and food product expert, assisted by a staff of thoroughly trained men. The fruit is bought every year in large quantities under strict contract as to quality, and this, together with expert handling, guarantees that "Sinalco-Seele" is kept up to a uniformly high standard.

Sinalco is used in all classes of society, and is served in the army and navy and in many hospitals and schools. Responsible concerns located in localities where agencies have not yet been established who are desirous of handling a profitable and quick-selling product would do well to write the Sinalco-Aktiengesellschaft at the above address for full particulars, and a copy of the special offer which they are now making to sales agents.

Running a Rowboat Without Oars

UNTIL very recently motor boating was one of those summer pleasures that are reserved for people with enough money to pay for luxuries. But the time has come when the motor boat can no longer be included among the expensive pleasures. The advent of the detachable rowboat motor has accomplished that, for now it is within the reach of almost everyone to own and operate a very real little motor craft. The coming summer will most likely see a greatly increased demand for this latest addition to the family of power-driven pleasure conveyances.

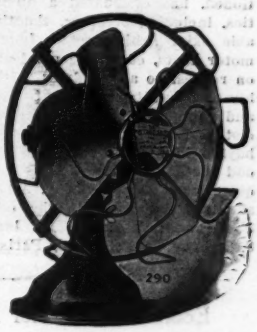
The Lockwood-Ash detachable rowboat motor

Among the manufacturers who have contributed to the success of the detachable gasoline motor is the Lockwood-Ash Motor Company, of Jackson, Mich., U. S. A. This company has just come forward with a very attractive little engine of this class, their latest addition to a long series of marine motors ranging from 1½ to 12 horsepower. It is an exceedingly light and compact motor, which can be attached to any rowboat in less than two minutes, and is capable of sending it along at the rate of six to eight miles an hour. In addition to its lightness, the new L-A motor presents a number of attractive features; it can be run very economically—30 miles to the gallon of gasoline; it has a silent muffler; it is positively reversible; it is rudder-steered; and, last but not least, it is so inexpensive that it is within the reach of all.

The company invites the attention of all importers to this new product of theirs at this time because they have recently made definite arrangements to enter the export field, and desire to correspond with firms who can handle large quantities. Inquiries for further details and catalogues should be addressed to the Lockwood-Ash Motor Company, 453 Horton Ave., Jackson, Mich., U. S. A.

An Adjustable Eight-Inch Desk and Bracket Fan

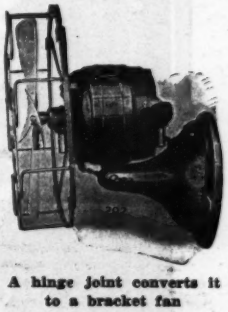
THE illustrations herewith show the new 8-inch direct current desk and bracket fan developed by the Robbins & Myers Company, Springfield, Ohio, U. S. A., for the season 1914.



The new Robbins & Myers eight-inch desk fan

This fan is made for both 110 and 220-volt direct current circuits. By means of a speed regulating coil and switch in the base, three speeds can be obtained, 1,700, 1,400 and 1,000 revolutions per minute. At these speeds the respective current consumption is 25, 20, and 15 watts, respectively.

The blades are made of the best grade sheet brass, and are riveted to a punched speed carrier which is formed to give a uniform pitch to all blades—the pitch being such as to secure maximum air displacement with minimum power. A strong durable guard surrounds the blades; it is fastened to the body by four steel supports, which are fastened rigidly with screws. This guard is amply strong to permit the fan to be carried about by it without injury. The frame and base of the motor are highly finished in baked black enamel, with fine gilt stripes. The blades are brushed brass finish and lacquered.



A hinge joint converts it to a bracket fan

In all details the fan is built strongly; it runs quietly, and meets the needs of the home or office where larger fans are not desired. A hinge joint provides for trunnion adjustment, adapting the fan for either desk or bracket service.

This fan is illustrated and described completely, along with the entire 1914 "Standard" line, in a handsome new catalogue just issued by the Robbins & Myers Company, a copy of which will be mailed to anyone interested, on request.

For further particulars regarding this fan, or any of the many other types described, address the company direct as above, stating what current is to be used and type of fan desired.

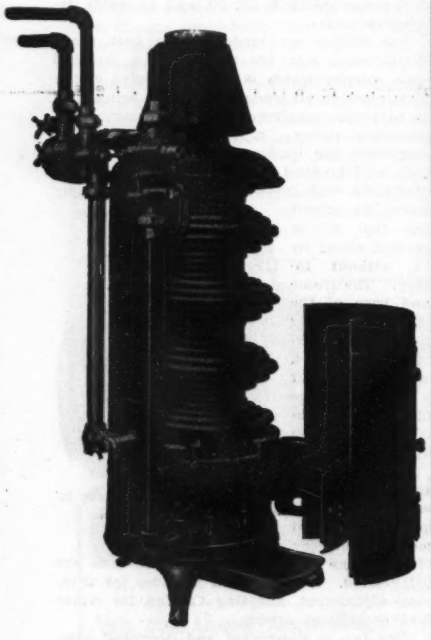
Hunting and Riding Dress

COVERING comprehensively the most popularly accepted designs in riding and hunting dress, an illustrated booklet of 22 pages has been issued by Thomas & Sons, 32 Brook Street, Grosvenor Square, London, England, W., sporting and military tailors. The booklet, which is entitled "Dress for the Hunting Field," shows by means of full page sketches and briefly worded descriptions the characteristic features of garments suitable for gentlemen of all ages and tastes, and includes swallow tail coats for hunting, fine weather coats for fashionable hunts, single-breasted swallow tail coats, a modification of the former garment and best suited to slight figures; easily tied hunting stocks; cut-away hunt coats; the Beaufort, a bell-skirted variety of hunt coat; frock hunt coats and long frock coats; riding sacs, a long, full skirted design suitable for cub-hunting or plain wear; covert coats, rain-proof; mufti hunting coats; cleaning fluids for scarlet coats; hunting gloves and leggings.

The concern has been actively engaged for 25 years in the production of hunting wear, and, in addition to the styles above mentioned, has originated a number of specialties, including breeches, shooting and detachable skirt fishing coats, improved trousers, motor coats, etc. The catalogue will be sent on request to any address, with estimates for hunting outfits and hunt servants' liveries and quotations on single garments. As these clothes can be made from self-measurements, buyers in any part of the world can order odd sizes and nevertheless secure their requirements without delay. All correspondence should be directed to the company at the above address or to its branch office at 8, Avenue de Friedland, Paris, France.

Economical Water Heaters

THE Humphrey bath water heater, manufactured by the Humphrey Company, 601 Rose Street, Kalamazoo, Mich., U. S. A., is



Showing the interior coil system of the "Humphrey" house water heater

a substantially built device which is designed to heat bathroom water instantly by the use of either natural or artificial gas, acetylene gas excepted. When properly attached so that water can readily pass from it to all the faucets in a bathroom, the heater is claimed by its makers to furnish hot water at the rate of 1½ to 2½ gallons per minute. When sufficient water has been drawn, the gas and water are turned off together, the flame continuing only while the water runs.

To install the heater, a steel shelf or base is screwed to the wall and the body of the

The "Humphrey" bath heater for quick warming of water in bathrooms

heater placed over it. The usual gas and water connections are then made, and a vent pipe attached. The heating operation is started by turning on and lighting a pilot. Two valves, one to admit gas and the other to admit water, are then opened. The gas emitted from the burners is ignited at once by the pilot flame, while the water passes upward through spiral-shaped, corrugated copper tubes which are heated directly by the burners. The total area of the hot inner surface of the tubes upon which the water is spread is about 11 square feet, and, as the water flows in a comparatively thin sheet, the heating is instantaneous. The further advantage of this arrangement is that there is o limit to the quantity of water which can be heated. The stream of hot water flows steadily as long as the gas and water are turned on.

The company also manufactures a line of automatic heaters to supply hot water to every hot-water fixture in a house. These heaters are larger than the bathroom type and are designed for installation in kitchens or basements. This type of heater is called by the makers the "Humphrey Automatic Geyser," and is made in two styles: Type A (four sizes) for supplying three to eight gallons per minute, and Type B where a great quantity of hot water is needed. The latter is installed in connection with some storage system or hot water tank. The water is heated in both types by means of a system of coils through which it is forced. These heaters, as well as those of the bathroom type, are described in two illustrated booklets, Nos. 11 and 12, which will be mailed on request to any address.

A Gas Lamp for Stores

THE "Reflex No. 20" is a gas lamp of the inverted type designed for use in stores, factories, hotels, restaurants, halls or similar places where a stronger illumination is needed than for private residences. The lamp is provided with a mantle which is two and one-half times larger than the common inverted variety of standard size, and produces about three times as much light. Operation is through a chain, which serves to ignite or extinguish; and a plainly audible signal—a sharp click—automatically announces when the gas is turned off, while an arrow indicator tells at a glance whether it is turned on or off.

All interior parts of the burner are made of brass, insuring maximum durability. The glassware is held in place by means of an automatic wire globe-holder, doing away with the use of screws. To concentrate the light carefully designed reflectors are provided that throw the rays downward where wanted—a feature especially valuable for factories and workrooms. At the same time, enough light is diffused above to prevent overhead shadows. A soft light and good combustion are secured by the use of an adjustable air shutter above the Bunsen tube, and a thermostat below the mixing chamber. This thermostat fits easily into the top of the burner tip and both thermostat and tip are removable. A cylinder, which runs around the mantle to protect it, is made of heat-resisting glass, and can be

A powerful inverted gas lamp for stores, halls and large interiors

adjusted without trouble. Either the reflector or cylinder can be removed and replaced separately, without disturbing the other. Breakage is thus reduced to a minimum.

The length of the lamp over all is 16 inches, the accompanying illustration showing the lamp equipped with a nine-inch clear holophane reflector. Because of the simple but improved construction of the lamp throughout, the consumption of gas is very small, and, with the view to making the entire unit highly desirable from the standpoint of appearance, the manufacturers are offering ornamental gas chains and decorative housing.

Buyers of commercial furnishings, building contractors and others interested in the lamp can obtain full details regarding its operation and prices by communicating with the Welsbach Company, Gloucester, N. J., U. S. A., who will send on application copies of their catalogue "A," devoted to gasoline lamps, and catalogue "B," describing accessories and equipment.

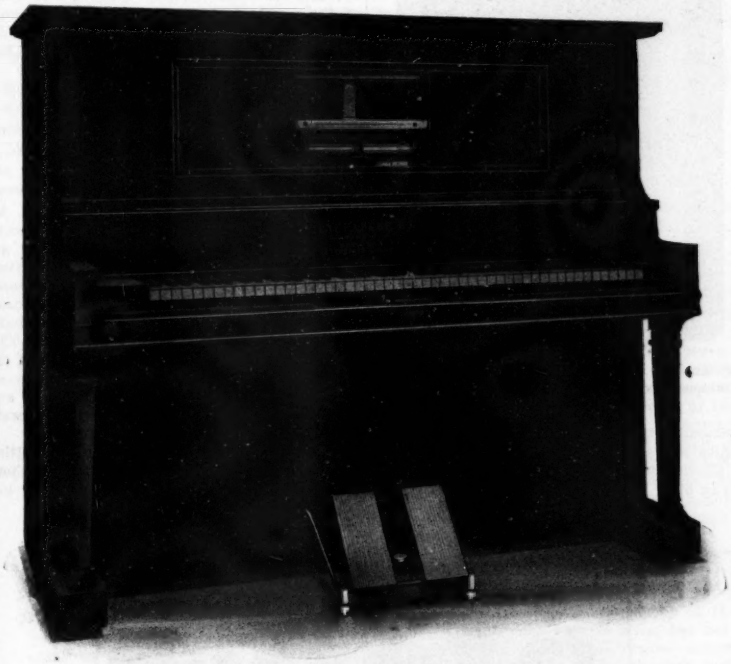
A Player-Piano at a Moderate Price

THE accompanying illustration gives an excellent idea of the appearance of one of the latest productions of the piano manufacturing firm, The Laffargue Company, Inc., 134th Street, Cypress Avenue and Southern Boulevard, New York City, U. S. A. While the design is plain, it is eminently in good taste, and the steadily increasing volume of sales of this style indicates very clearly that it has touched a high place in popular favor. But in reality the appearance of an instrument of this kind carries but little weight, so far as actual sales are concerned, unless its attractiveness is accompanied by genuine intrinsic merit in the way of tone, durability and satisfactory action, and it is to these particular features, the Laffargue Company claim, that the demand for this player-piano is due.

Formerly the cost of a player-piano of this quality would have placed it beyond the reach of people of ordinary means, but the company state that owing to improved factory methods, the extensive use of labor-saving machinery and production on a very large scale, they have been enabled to effect a great reduction in price and at the same time fully maintain their high standard of quality.

The manufacturers of the Laffargue player-piano have always considered the most important feature of the instrument to be its ability to reflect in its tonal expressions the mood of the operator as expressed through pressure applied to the pedals, and while the control of the loud pedal, the melody buttons and the tempo is claimed to be even more complete than on other players, the seat of the expression is placed in the pedals. This is because it is much more natural when added emphasis is needed on any note to press suddenly on the pedal with the foot than to manipulate a button or key.

The greatest care is given to the manufacture of every detail in the working parts of this player. Practically all the metal work is brass, including the tracker bar, which is a heavy piece of metal, instead of the shell most frequently used. The thickness of this piece of brass makes it possible to drive the tubes directly into the material, thus giving what is known as a "driving fit" and making leaks absolutely impossible. All the tubing is of seamless brass, instead of rubber or lead, as in some other makes of player-pianos, which renders the Laffargue instruments practically indestructible and unaffected by atmospheric changes. The motor has no function except to roll and unroll the music, which it does with smoothness, noiselessness and precision. It will handle a large or small roll with equal facility, and without putting any appreciable load on the mechanism. The makers state that the entire player is constructed of the best materials that money can buy, and put together after the most thorough tests by expert workmen. Thus, all possibility of misadjustments or defects in material or workmanship are eliminated, and the purchaser is ensured an instrument that will afford him permanent pleasure. Those interested in handling a line of pianos and player-pianos should write to the Laffargue Company at the above address for a copy of their handsomely illustrated catalogue in which they are fully described and prices given, together with export terms and discounts.

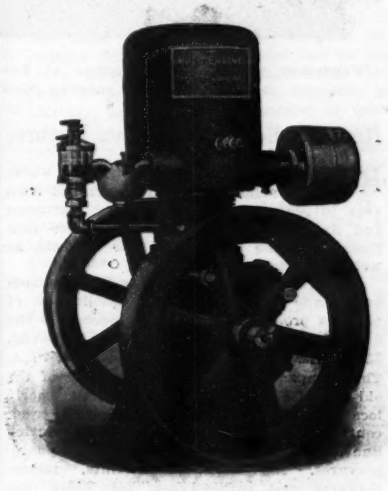


A Laffargue piano player. This style of case is made in either mahogany or oak, and its graceful lines and fine finish make it very popular

Engines, Hoists and Pumping Outfits

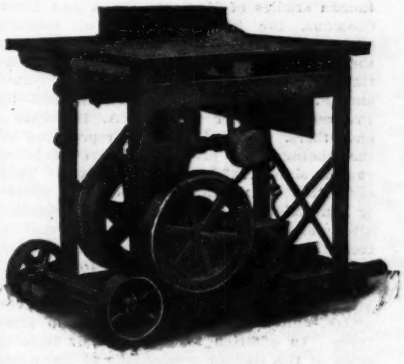
IN an illustrated catalogue of 64 pages the Novo Engine Company, 295 Willow Street, Lansing, Mich., U. S. A., describe their full line of portable and stationary gasoline engines, hoists and pumping outfits. The engines shown range from one to 15 horse-power and are designed for both indoor and outdoor service, with the advantage that, although water-cooled, they cannot be damaged by freezing. The manufacturers state that they are so built as to insure the freedom from overheating that water-cooling implies and also the absence of lubrication trouble. The cooling arrangement is clearly explained in the catalogue and a full description given of other vital parts.

For buyers who desire to use the engines for the operation of house pumps and garden sprayers a detachable pump jack is shown, which is furnished complete with strong wooden arms and cross head for attaching it to any standard pump. This jack can also be made to fit most domestic suction or force pumps, but is designed for use with only the small engines of 1 and 1½ horse-power. The models of from 2½ to 6 horse-power are shown mounted on skids and on steel hand trucks, and are claimed to be especially suitable for operating concrete mixers, air compressors, saw rigs, well-drilling machines, printing presses, woodworking machinery, irrigation plants, baling presses, power sprayers, feed grinders, power churns and similar machinery. Those of from 7 to 10 horse-power are efficient, frost-proof power plants for irrigation and small municipal pumping stations, saw mills, rock crushers, brick and cement block factories, feed and grist mills, creameries, etc., while the largest models serve for heavy hoisting, for filling railway water tanks and other purposes calling for the expenditure of considerable power.



Novo Jr., 1 h. p. (or 1½) engine, designed for house and farm pumping, operating spray pumps, etc.

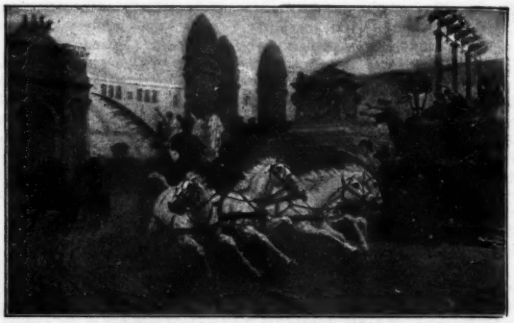
The hoisting outfits illustrated are furnished in three general types—the reversible, which runs in either direction; the non-reversible, which operates in one direction only, and a double drum reversible, possessing two revolving drums which are reversible and run independently of each other. Among the pumps are suction, diaphragm, deep well, centifugal and double acting force and suction types, all of which are clearly described.



Novo portable saw rig direct connected to a 3 h. p. engine, suitable for carpenters, builders, etc.

Buyers of supplies for any of the purposes above named will receive on application a copy of this catalogue, designated as No. 614. The information contained is very complete, but any further data desired can be secured by corresponding with the company at the address given.

"Printemps d'Amour" ("Springtime of Love"). A copyrighted reproduction of a painting by F. Vinea



"Greeting the Victor." A copyrighted photogravure printed in Vienna after a painting by E. Forti

Reproductions of Famous Pictures

REPRODUCTIONS of good original works of art seem to be more in demand from year to year and a number of the European and American publishers are therefore continually on the lookout for new subjects, as well as adding to their lists.

Among the fine art publishing houses which have made a specialty of the publication of pictures produced by various processes is the firm of Fishel, Adler & Schwartz Company, 338-40 East 59th Street, New York, U. S. A. This company, which is the successor of the old firm of Fishel, Adler & Schwartz, formerly located at Fifth Avenue and on Fulton Street, continues to publish the large and varied line of etchings and steel engravings, photogravures, fac-similes, mezzo-tints, mezzogravures and carbon-types, for which the original firm has been so well known since 1876.

Their publications are to be found among the best collections in private homes, in schools and art galleries in every city of the world. Many of the reproductions are photographed from the original paintings or drawings. A partial list of the painters whose work has been reproduced by the Fishel, Adler & Schwartz Company includes the American names of J. G. Brown, Edward Moran, D. Ridgway Knight, Henry Farrer, William Hart, Charles Y. Turner and Jennie Brownscombe, besides a generous list of old masters and European artists of first rank, including Landseer, Reynolds, Rosa Bonheur, Julien Dupré, Van Dyck, Rembrandt, Franz Hals, Gainsborough, George Romney, J. B. Greuze, J. M. Nattier and many others.

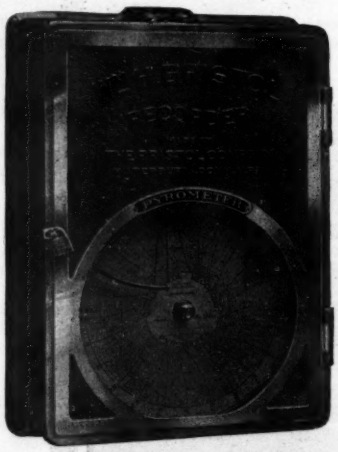
The variety of subjects included in the firm's list is almost unlimited—from the Holland scenes of Houben and Portielje, to the Roman studies of E. Forti, Diana and Heva Coomans, the historical titles of Edward Moran and V. de Paredes, and the operatic themes of J. Bernard and others. The marine field is represented by Theodore Weber and F. Schnars-Alquist, the allegorical by Professor Von Der Ouderaa, A. H. Schram and others. Many of these are reproduced by the photogravure process and are made in various sizes, 17x30, 20x30 and 11x20. They are either plain (that is, black and white) or hand-colored. A large number of them are also published as fac-similes—printed, that is, from the copper photogravure plates in color.

The company publishes about 40 beautiful subjects in the well-known mezzo-tint process printed in colors direct from the engraved plates, and also about 100 subjects in artotypes. In addition to the above, it imports some of the leading productions of European art publishers, such as fac-similes and photogravures, de luxe prints, color etchings, English color prints, Dutch prints, artist proof etchings and water colors.

It is the custom of the company to send its catalogue to all those engaged in the picture business upon application accompanied by a remittance of $1. This amount will be credited to the account of the customer on his first purchase of a reasonable amount. The catalogue contains about 750 illustrations of attractive subjects.

Combination Indicating and Recording Pyrometers

THE Bristol Company, of Waterbury, Conn., U. S. A., manufacturers of instruments for recording and indicating temperature, pressure, etc. for over twenty-five years, are desirous of directing attention to their



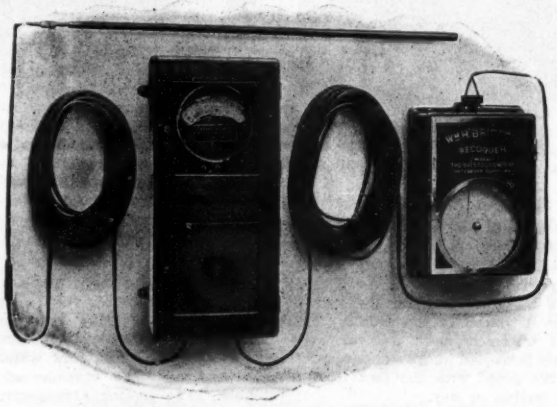
Frictionless ink type pyrometer, recording by means of a red line on white printed chart

thermo-electric combination pyrometers for indicating and recording high temperatures. A pyrometer of this type is particularly useful in blast furnaces, etc., where it is required for a double purpose: first, for the guidance of the furnace operator as to the intensity of heat being used, and second, to provide a continuous record of the same temperatures.

In the accompanying illustrations are shown a complete combination indicating and recording electric pyrometer outfit and one of the two units composing it. Two distinct instruments are provided, the indicating instrument, which may be located in the immediate vicinity of the furnace; and the recording instrument, which may be installed at a distance—as, for example, in the superintendent's office—both being controlled by the same fire end. An invaluable feature of this outfit is the patented idea of constructing the thermo-couple, or fire end, in two sections. The sections being detachable, the operation of occasionally replacing that part of the couple which is subjected to the high temperatures being measured is greatly facilitated. Special alloy fire ends are furnished in duplicate at very low cost.

The Bristol recording instrument is made in two types, one designed to make a record consisting of a white line on a dark semi-transparent smoked chart; and the other, a red line on a white paper chart. They are both operated on the same principle, however, and are similar in every other respect. All these instruments are equipped with jewel-bearing milli-voltmeter movements, and are designed to automatically record by a frictionless method, i. e., the recording arm is pressed down periodically and brought into momentary contact with the surface of the chart, thus avoiding any friction whatever. This principle greatly increases the efficiency of the device because the working parts must necessarily be very delicate in construction, and the slightest amount of friction might cause the indicator to record incorrectly.

The manufacturers are desirous of getting in touch with reputable buyers throughout the world and state that printed matter will be mailed upon request. Correspondence is invited regarding requirements for any instrument for indicating, recording and regulating temperatures.



Combination indicating and recording pyrometer—indicating instrument, at left, for operator at post of duty; recording instrument for superintendent in his office

A Post Card and Button Camera

THE Diamond Post Card Gun is an all-metal camera with which photographs may be taken and developed on post cards and buttons. The camera, as shown in the accompanying illustration, has the general shape of a gun or cannon, the cylindrical portion constituting the body proper. This body, made of brass, is supported by an aluminum base, which is cast hollow and which serves as a magazine for the post cards. Suspended beneath the body is a developing tank.

No films, plates or printing of any kind, the manufacturers claim, are necessary in photography with this camera. The picture can be taken directly upon a card in positive fashion, and then dropped into a "three-in-one" liquid solution which combines developer, fixer and toner. A card holder, with openings for each of five different sizes of post cards, permits the operator to insert for use any size, without making changes. After a card has been exposed, it is removed from the card holder and dropped into the developing tank, which has two compartments for the receiving of the post cards and buttons, each compartment accommodating ten. The card is developed, toned and finished in about a minute, and the operation completed by washing it in cold water and by running it through a wringer attached to one of the legs of the tripod. The card is then ready for mailing.

The lens of the "Gun" is of the rapid action double variety, and is mounted in a compact automatic shutter. Operation is by rubber bulb. Focusing troubles are obviated by

Metal gun-shaped camera which takes photographs on post cards and buttons

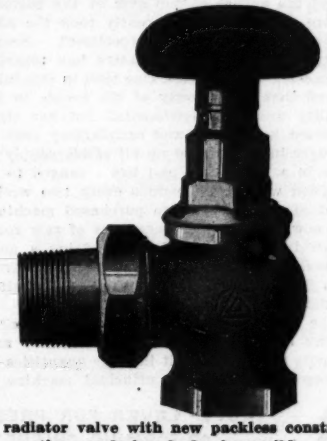
an iris-shaped focusing scale which operates on a jacket connected with the shutter. To insure proper focus, the operator estimates the distance between the camera and his subject and then moves an indicator on the iris scale to a corresponding number indicated thereon. If the subject be five feet distant, the indicator is placed directly on the numeral 5, and in similar manner up to 50 feet. If a general landscape or scenic view is to be taken, the indicator rests on the numeral 100, which creates a universal focus of the lens so as to include in the photograph any object within 1,000 feet of the camera.

Post cards of the Colonial, Victoria and official mailing variety can be used to advantage; photographs taken on the first two varieties are claimed to give pleasing effects when mounted in embossed frames, which are supplied in a number of colors. The button photos can be mounted in metal brooch frames with pin attachments and worn as brooches or lockets.

The International Metal & Ferrotype Company, 2223-31 West Twelfth Street, Chicago, Ill., U. S. A., who are manufacturers of the camera, are willing to grant exclusive agencies in countries where they are unrepresented, and those interested should write to the company at once, in any language. Circulars describing the "Gun," its attachments and supplies, will be mailed to any address in English, Spanish, German or Russian. All correspondence to the company should be directed to Dept. D. R., at the above address.

A New Packless Radiator Valve

A RADIATOR valve for steam or hot water heating, but with a distinctly new packless construction to insure permanent tightness and freedom from leakage around the stem, has recently been brought out by the



A radiator valve with new packless construction rendering leaks impossible

Detroit Lubricator Company, Detroit, Michigan, U. S. A.

Integral with the stem of the valve is a collar upon whose upper side are circular V-shaped projections. Between these is placed a disc which is forced under pressure into a recess in the valve bonnet; in this position the disc is reamed to a flange so as to insure an accurate fit for the upper part of the stem. The disc is held here under compression by means of a spring acting on the stem through the collar. Thus it is impossible for steam to rise in the valve above the collar, and this construction makes the valve especially well adapted for use on vacuum systems where tightness is essential.

In addition to the advantages gained by the design, the valve has an attractive appearance, being symmetrically proportioned in all sizes, with a smooth satin finish on the metal surface that the makers claim has never been approached in radiator valve construction. The valve handle is of finished mahogany, protected from damage by a cloth bag which is not removed until after installation and completion of the decorating. The handle is large and turns easily, being of the proper shape for a satisfactory grip, without possibility of the hand coming in contact with the heat of the metal. There is no recess in the top where dirt may collect.

The valve can be supplied in six sizes, both for right and left hand, and, as all unnecessary and complicated parts are eliminated, it is simple and durable. Those interested in the mechanical features of the valve should write the company at the address given for their pamphlet which details the positions and functions of the parts.

A Great Time and Labor Saver

ONE of the most useful implements that have been produced in recent years is what is known as the "Yankee Lifter," manufactured and marketed by the Brown Specialty Machinery Co., 2448 West 22d St., Chicago, Ill., U. S. A. This device, which takes the place of many tools and implements on the farm, possesses a number of valuable features that render it a great time and labor saver. Primarily designed as a weight lifter, it can be used for so many other purposes that the manufacturer claims that no farmer, thresherman, teamster, mill, factory, house mover, contractor or builder should be without one. The device can be used as a wagon jack, as a barbed, smooth or woven wire stretcher, as a wire mender, as a stump puller, or as a bench vise, clamp, press or wheel repairer. It can also be employed to meet many other needs that arise from time to time on farms or in mills or factories.

Although the Yankee Lifter is very light, weighing only 23 pounds, it possesses enormous strength and lifting power. It is extremely simple in operation and is so strongly built that it is not likely to break or get out of order. Every part is made of the finest grade of steel or malleable iron, and there are no cogs, notches, ratchets or pawls that in most cases serve to weaken devices of this nature. It is impossible for the machine to slip, and it is just as dependable under a weight of several thousand pounds as under a few hundred, a feature which is indispensable in tools of this class.

Among the other specialties manufactured by this firm is a line of seamless cast iron jackscrews. These jackscrews are 24 inches long and 3 inches in diameter, with a rise of ⅝ of an inch to every turn of the screw.

Showing the Yankee Lifter in operation as a jack on a farm engine

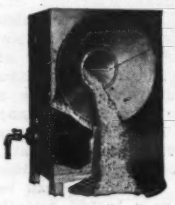
They are made of the highest grade iron, have great strength, and, as they are cast from a seamless pattern, are more easily handled and last longer than any other jackscrew on the market. A hydraulic test recently made disclosed that the breaking strength of this screw was 54 tons, as against 24 tons for the highest of any other make.

The Brown Specialty Machinery Co. have prepared a catalogue in which are given a large number of illustrations showing the Yankee Lifter being used for various purposes, among them, pulling stumps, stretching wire fence, lifting heavy weights, etc. The manufacturers state that these tools sell rapidly wherever shown, and that they will send catalogues, prices and other particulars to merchants and farmers in any part of the world upon receipt of name and address.

PIANOS AND PLAYER PIANOS OF SUPERIOR QUALITY
The result of many years of effort and thoroughly tested in all climates
Magnificent Instruments at Fair Prices
Catalogues and further information always at your service
WINTER & CO. SOUTHERN BOULEVARD NEW YORK CITY, U. S. A.

A Business Making Large Profits on a Small Investment

THE most popular delicacy in the United States is a cereal called "Pop Corn," owing to the fact that when the dry kernel is heated it pops open, changing into a white, flaky mass many times larger than its original size. When prepared in this manner it is both very palatable and nutritious and the demand for it is so great that many thousands of acres are devoted to its production. "Corn" is hardly the correct name for it, however, because it is different from feed corn or maize, and is never used for feeding horses or cattle. It is also quite different from the sweet corn used in the canning trade.



Long's patent rotary popper

A small amount of this variety of corn yields an enormous crop of grain and on account of its low cost and great food value, the United States Government has had expert investigators at work and has issued their report in pamphlet form. This report urges gardeners, farmers and householders to grow a small patch of pop corn for their own use. All classes of people relish this dainty which is especially delicious when prepared as a kind of confection.

Recognizing these facts Mr. W. Z. Long, a confectioner of many years' experience in the manufacture of fine candies, originated a special process for making this pop corn into a most appetizing and toothsome confection which immediately created a great sensation with his established patronage. Mr. Long named this new product "Crispettes" and perfected all of the special machinery necessary for its manufacture. He first did this in order to take care of his own rapidly increasing trade, and afterward placed some of the machinery with confectioners in other parts of the United States.

There was an immediate demand for the machines. Established confectioners at once placed them in their factories, while other men purchased outfits with which they opened up retail stores in the shopping districts of cities and large towns and in all of the leading summer resorts throughout the country. They proved equally popular at the seaside and in the mountains, as well as at hundreds of public parks, at many of which they are operated to their full capacity all the year round. Many factories have also been established for the sole purpose of manufacturing crispettes and other pop corn confections, some of which make at least $5,000 worth of pop corn goods per day.

At some of the great watering resorts and public parks, Mr. Long states that the sales amount to $500 and $600 per day, while the sales in some of the retail stores in cities have run as high as several hundred dollars a day. Besides these large users, located in places where great crowds congregate, there are large numbers of smaller stores and manufacturers scattered all over the United States who are doing a very profitable business, but on a smaller scale.

Mr. Long did not try at first to place his machine in foreign countries, because pop corn is not much grown outside of the United States. Recently, however, a few of the machines were introduced in different parts of the world and proved remarkably successful. Those who purchased them did not understand the nature of pop corn or the business before buying, and apparently took the matter up as a novelty or experiment. Nearly every one of these purchasers has reported large sales of crispettes. One man in Dominica feared that the poverty of the people in his locality would be detrimental, but has since reported large sales and satisfactory results. A buyer in Spain used up all of his supply of corn in a short time and has arranged to be supplied with 3,000 pounds every two weeks. Most of those who have purchased machines are now buying large quantities of raw corn, which indicates that they are doing a good business. In time they will no doubt grow corn for their own use, as the seed is suited to the soil of most countries.

The W. Z. Long Company, who are introducing this delicacy, sell the machinery and utensils for preparing it in large quantities at a very low cost. The principal machine is shown in the large illustration on this page, being the machine for making the crispettes, which are the most popular form of pop corn confections. Another illustration shows Long's patent rotary popper, a device for popping the corn automatically and ejecting it as fast as it pops. This can be heated by gasoline, natural gas or artificial gas. The other illustration shows a gasoline furnace which is recommended for such places as do not have gas. Buyers in ordering should state whether they desire an outfit to be used with natural or artificial gas or with gasoline.

All of this machinery is so designed that beginners can get very satisfactory results at once. All parts are solidly constructed so that there will be no breakage. The W. Z. Long Company also give the addresses of jobbers where all the necessary raw material can be had at lowest prices. If desired they will even supply raw material at cost price, so that purchasers of machines can more conveniently begin business. Formulas and instructions are furnished in any language and an illustrated booklet entitled "Dollars and Sense" in the Crispette Business will be sent to any address on request.

Gasoline furnace for places that do not have gas

This business has proved to be a very profitable one and also permanent, because people do not tire of crispettes and in countries where there are numerous public fairs, markets or popular resorts anyone who has one of these outfits is assured of a very large sale for his products. For copies of the booklet above mentioned, and export terms, address W. Z. Long Company, 49 High Street, Springfield, Ohio.

The accompanying illustration gives an excellent idea of the appearance of the Crispette Machine. It can be arranged for heating by natural or manufactured gas or gasoline, and the heater is so designed as to be under perfect control at all times. All castings are heavy and durable and fully nickeled, while the tables, legs, etc., are made of solid hardwood.

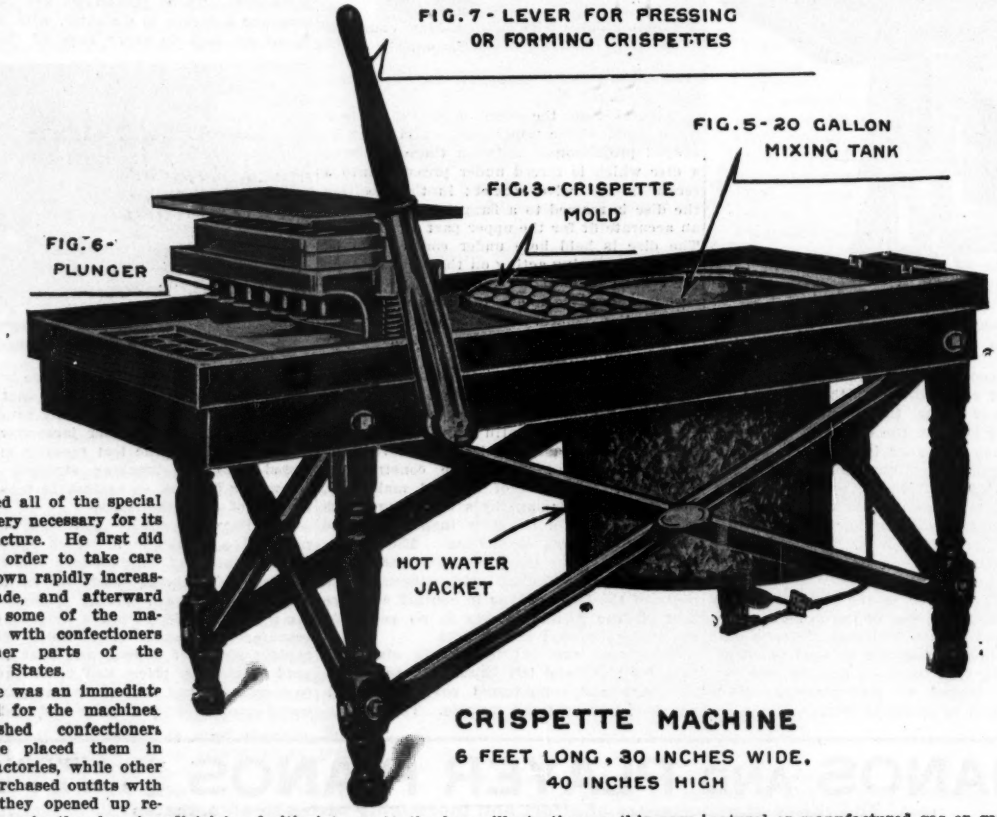


FIG. 7 - LEVER FOR PRESSING OR FORMING CRISPETTES
FIG. 5 - 20 GALLON MIXING TANK
FIG. 3 - CRISPETTE MOLD
FIG. 6 - PLUNGER
HOT WATER JACKET

CRISPETTE MACHINE

6 FEET LONG, 30 INCHES WIDE, 40 INCHES HIGH

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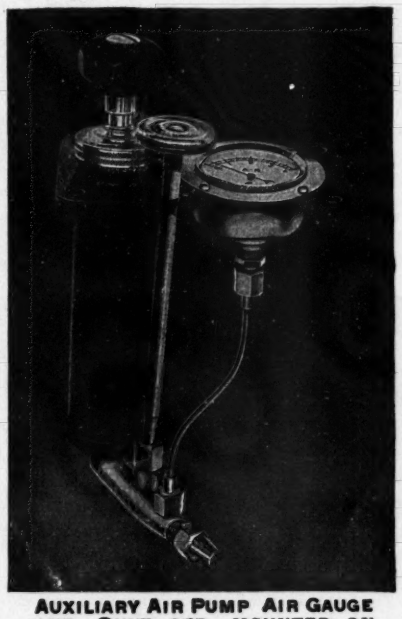

AUXILIARY AIR PUMP AIR GAUGE AND SHUT-OFF, MOUNTED ON SINGLE PLATE.

WE WOULD LIKE TO CORRESPOND WITH YOUR ENGINEERING STAFF ABOUT—

GASOLINE GAUGES
AIR PRESSURE GAUGES
TYRE GAUGES
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TANK FILLER CAPS
GASOLINE SEPARATORS
OIL SIGHT FEEDS
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Detroiter

A New Type of Beauty and Ample Power

Distinction is stamped in every detail of this new 1914 stream-line Detroiter—a beauty no other car of moderate price even approaches. In addition, the new motor is still more powerful, being 3½ by 5 inches, bore and stroke.

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An export department, trained to give instant and intelligent service to every part of the world, also makes the Detroiter an exceptional car for the dealer in any part of the world.

There is still open territory. Write at once for full particulars.

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YOU can transform the dirtiest water into bright, clear, sparkling water; you can remove odor or taste, making the water pleasant and safe to drink if you will use a

LOOMIS-MANNING FILTER

The reason why these filters have come to be recognized as the leading filters for use in office buildings, hotels, hospitals, country homes, city homes and all kinds of manufacturing establishments may be stated briefly as follows:

Simple to Operate

The filter is cleansed by reversing the flow of water, which is accomplished by the movement of one lever operating the Manning Single Controlling Valve. This valve makes the care of the filter very simple and makes mistakes impossible.

Effective Results

The filter produces splendid results over long periods of time because the filter bed is kept in good condition by our system of cleansing it. The Loomis Cutting plate through which the bed passes under the action of the washing current breaks up the bed so that every particle is cleansed. The entire bed agitates every time it is washed. All accumulations are driven off through the waste line and the sight glass into any convenient sewer or drain.

Durable Construction

Only materials which will withstand the corrosive action of water to the highest degree are used in the construction of this filter. The outside casing is cast iron, the Manning Single Controlling Valve is solid bronze, the screens are tinned copper, pipe work is either galvanized iron or brass as desired.

They Filter All the Water

The entire water supply entering a building or residence, the water used in manufacturing, for bottling purposes or for boiler use can be made bright, clear and attractive. The filter is attached to the main supply pipe so that every drop of water passes through it. Full instructions for connecting up and for operating are sent with each filter.

The filters are built in many different sizes, styles and capacities. Inquirers should state the quantity of water desired to be filtered per minute or per hour, the condition of the water to be filtered, the pressure available, and the size of their supply pipe.

Loomis-Manning Filter Mfg. Co.

131 South 16th Street

Philadelphia, Pennsylvania, U. S. A.

Cable Address: LOOMISMAN, W. U. T. Code

Digging Wells with a Post Hole Auger

IN a circular they have recently issued The Fenn Manufacturing Company, of Charlotte, Mich., U. S. A., state that the popularity of their well-known post-hole auger has been greatly enhanced since it has been discovered that it is a wonderfully efficient device for drilling wells of moderate depth. In soil where rock or large stones are not encountered, it can easily drill to a depth of 40 feet, and many instances have been reported of as much as 60 feet. The firm say that in every instance their regular post-hole auger, such as should be in the possession of every farmer or land owner who has fences to erect or keep in repair, has been used, and the users claim that they have found it to be a highly economical and satisfactory means by which to obtain a supply of water when it is not too far below the surface.

The tool consists of two hollow blades so shaped at their ends that they can be fastened

With an ordinary pipe wrench this earth auger will drill wells

by a bolt securely, but loosely, to the end of an iron pipe or wooden post, while the others are a modified form of auger, which when given a twisting motion will penetrate the ground with remarkable rapidity, without the necessity of applying any particular pressure. In fact, the weight of the hands is about all that is required and is sufficient to open the blades so as to allow them to dig in the earth. About two and one-half turns are ample to fill the auger and the pull applied when lifting it out to empty it causes the two blades to close, so that none of the earth can fall out. This feature enables the tool to be used in all kinds of soil—soft loam, loose dry sand, clay and even mud when it has any consistency.

These tools can be supplied in a number of different sizes, so that wells of various diameters can be drilled and allowance made for the most convenient size tile or piping for lining them.

American Marine Engine in New Zealand

IN the annual regatta at Auckland, N. Z., the big motorboat racing festival of the New Zealanders, a cruiser powered with an American-made power plant was the sensation of the meet, according to the reports printed in the *New Zealand Yachtsman*. With her American engine, she outstripped all contenders and proved her title to being the fastest cruiser in the archipelago waters by taking event after event in the all comers' class.

This remarkable boat was the *Scripps III*, a 35-footer with a 7-foot 6-inch beam, powered with a Model "K" Scripps engine. She started things by winning the over 10-knot class opener Regatta Day. Before the regatta was ended, she had won the Championship Gold Medal for the fastest boat of any class, all comers; the Championship Flag for the fastest time, all comers; and the first prize, over 12-knot class, won from scratch in the All Comers' Handicap.

The cruiser was designed and built by T. M. Lane & Sons, Ltd., leading boat designers and builders in New Zealand. The regatta was the first real tryout for the model and its power plant and there it met the best English, Continental and American makes of engines. It was not an introduction of the Scripps marine motors to the New Zealanders, however, as they have for some years favored this American-made power plant even more strongly than their English cousins.

For catalogues, export price lists and further particulars regarding these marine engines, address Scripps Motor Company, Export Office, Whitehall Building, 17 Battery Place, New York, N. Y., U. S. A.

Acetylene Lighting Apparatus

THE latest catalogue issued by the Alexander H. Milburn Company, 1420-1426 West Baltimore Street, Baltimore, Md., U. S. A., illustrates and describes all the improved productions of that well-known concern in the way of acetylene gas house-lighting machines. Two general types of apparatus are described in this catalogue, the Standard "Wheel Feed" and the "Homegas" machines, the former intended for all installations from the average-sized home up to any number of lights that may be required, while the latter is designed to enable the owner of a small home that needs only a few lights to enjoy the advantages of gas lighting at a very moderate cost. The "Homegas" plants, however, may be installed on the unit plan, which permits the addition of more lights to be made whenever desired. Owners of buildings in isolated places contemplating the installation of a modern lighting system will do well to write for a copy of this catalogue, as within its pages will be found a great deal of information regarding costs and methods of care and operation that will be of considerable value to a prospective buyer.

Statement of the ownership, management, circulation, etc., of DUN'S REVIEW, International Edition. Published monthly, at New York, N. Y.; Editor, Edward Neville Vose, 290 Broadway, New York; Managing Editor, Edward Neville Vose, 290 Broadway, New York; Business Manager, William A. Crane, 290 Broadway, New York; Publishers, R. G. DUN & Co., 290 Broadway, New York; Owners: R. G. DUN & Co., 290 Broadway, New York, a firm composed of Robert Dun Douglass, 290 Broadway, New York; Francis L. Minton, 290 Broadway, New York; Joseph Packard, 290 Broadway, New York. Bondholders, mortgagees and other security holders, there are none.

(Signed) WILLIAM A. CRANE, Manager.

Sworn to and subscribed before me this 20th day of April, 1914.

PETER R. GATENS, Notary Public No. 21, New York County, N. Y.

(SEAL)

(My commission expires March 30, 1916.)